

## **ADDENDUM TO THE DRAFT ECONOMIC IMPACT ANALYSIS OF PROPOSED CRITICAL HABITAT FOR THREATENED AND ENDANGERED PLANTS ON THE ISLAND OF HAWAI‘I<sup>1</sup>**

### **1. INTRODUCTION**

In May 2002, the U.S. Fish and Wildlife Service (the Service) proposed designation of critical habitat under the Endangered Species Act of 1973, as amended (the Act) for threatened and endangered plants on the Island of Hawai‘i (the plants). This proposal encompassed approximately 437,300 acres of land on the Island of Hawai‘i (the Big Island). Because the Act requires an economic analysis of the critical habitat designation, the Service released a “Draft Economic Impact Analysis of Proposed Critical Habitat for Threatened and Endangered Plants on the Island of Hawai‘i” (hereafter the DEA) for public review and comment in December 2002.<sup>2</sup>

The primary purpose of the Addendum is to update the DEA. As such, the Addendum revisits the assumptions and analytic conclusions presented in the DEA in light of new information obtained since the DEA was published. It also addresses issues raised in public comments on the DEA. The DEA as revised and updated by the Addendum constitutes the final economic analysis on this proposal.

### **2. REDUCED UNITS**

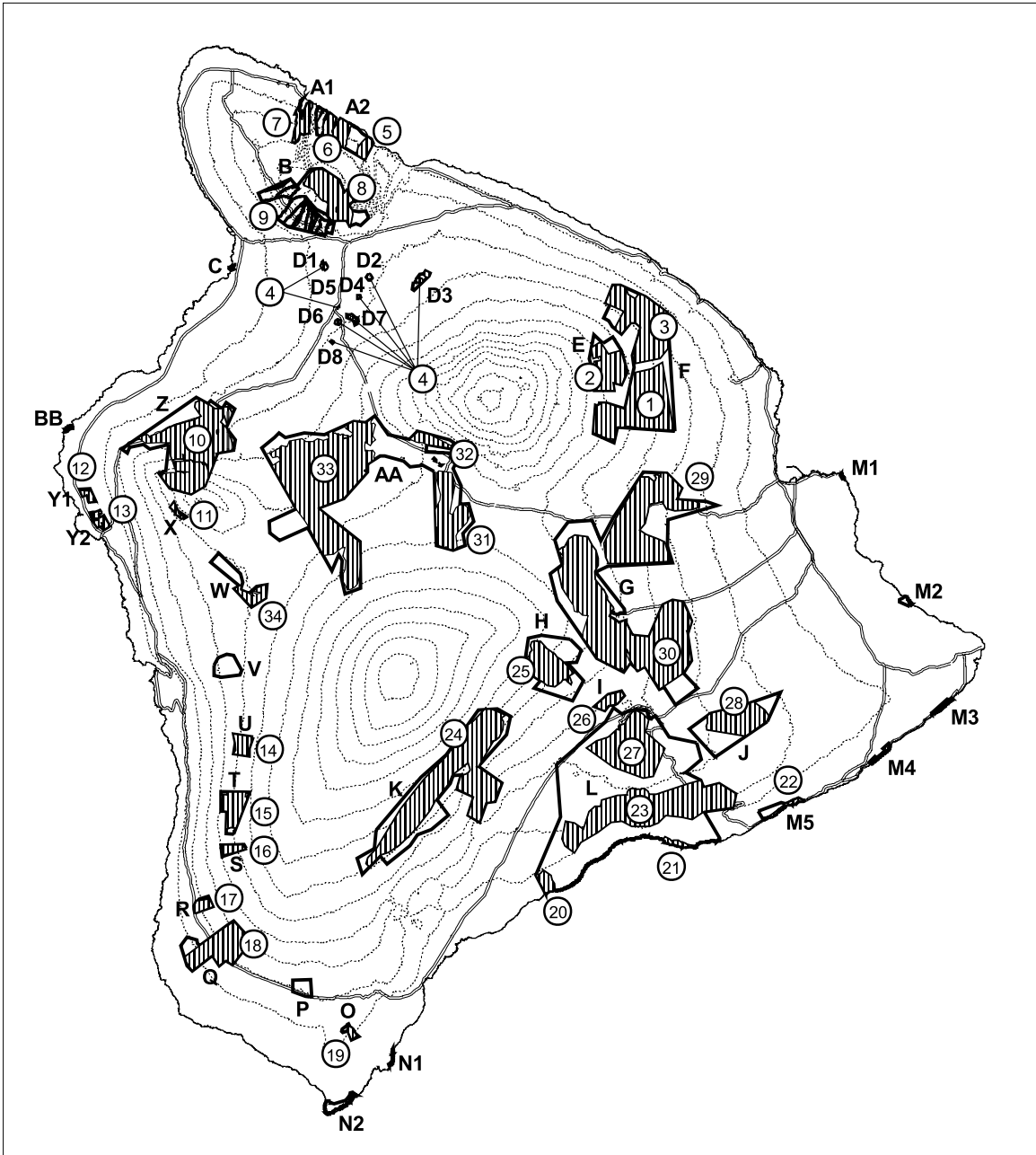
The Service indicates that, for biological reasons, it intends to remove five units and reduce in size all of the remaining units in the proposed designation. With the intended modifications, the total acreage would be reduced from 437,299 acres to 271,016 acres, or a decrease of 166,283 acres (38 percent). Figure Add-1 presents the extent of the originally proposed designation and the intended (revised) designation. For each of the critical habitat units, Table Add-1 presents the acreage as set forth in the DEA, the acreage as intended to be modified for biological reasons, and the change between the two. Table Add-2 presents the acreage by land owner type and the State Land Use Districts for the two designations and the change between the two.

The preamble to the final rule explains the Service’s revisions to the proposed critical habitat designation. Henceforth, the terms “intended designation,” “intended critical habitat,” and “intended unit” refer to the designation with the above intended modifications. The terms “proposed designation,” “proposed critical habitat,” and “proposed unit” refer to the designation as contained in the proposed rule.






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<sup>1</sup> A draft of this Addendum was prepared by Research Solutions, LLC, under sub-contract to Industrial Economics, Incorporated (IEC), under contract to the Service’s Division of Economics, with technical assistance from Decision Analysts, Hawai‘i. This final Addendum may, however, incorporate changes made to that draft by the U.S. Department of the Interior.

<sup>2</sup> Research Solutions, LLC, and Shalini Gopalakrishnan, under subcontract to Industrial Economics, Inc. *Draft Economic Impact Analysis of Proposed Critical Habitat for Threatened and Endangered Plants on the Island of Hawai‘i*. U.S. Department of the Interior, Fish and Wildlife Service. December 2002.



**Figure Add-1**  
**Proposed and Intended Critical Habitat Designations**

-  Intended Critical Habitat Unit
-  Proposed Critical Habitat Unit
-  Major Roads
-  Coastline
-  Elevation (1000-ft. contours)

**Table Add-1: Big Island Plants Proposed and Intended Critical  
Habitat: Acreage Differences, by Unit**

DEA = Draft Economic Analysis

DEA Units	DEA Acres	Addendum Units	Addendum Acres	Change
Unit A1	1,777	Unit 7	1,672	105
Unit A2	6,635	Unit 5	995	2,891
		Unit 6	2,750	
Unit B	20,263	Unit 8	6,811	11,959
		Unit 9	1,492	
Unit C	94	n/a	-	94
Unit D	1,305	Unit 4	701	603
Unit E	7,393	Unit 2	5,408	1,985
Unit F	34,363	Unit 1	15,789	5,843
		Unit 3	12,731	
Unit G	79,780	Unit 29	19,609	20,728
		Unit 30	39,443	
Unit H	13,151	Unit 25	6,011	7,140
Unit I	1,290	Unit 26	1,228	62
Unit J	12,516	Unit 28	6,755	5,761
Unit K	37,792	Unit 24	27,085	10,707
Unit L	95,148	Unit 20	1,201	57,273
		Unit 21	510	
		Unit 23	22,842	
		Unit 27	13,322	
Unit M	2,386	Unit 22	394	1,992
Unit N	1,178	n/a	-	1,178
Unit O	531	Unit 19	313	218
Unit P	1,351	n/a	-	1,351
Unit Q	8,770	Unit 18	7,406	1,364
Unit R	955	Unit 17	819	136
Unit S	947	Unit 16	819	128
Unit T	3,680	Unit 15	3,123	557
Unit U	1,520	Unit 14	1,476	44
Unit V	2,351	n/a	-	2,351
Unit W	3,654	Unit 34	1,604	2,050
Unit X	340	Unit 11	227	114
Unit Y1	524	Unit 12	427	97
Unit Y2	826	Unit 13	730	96
Unit Z	26,535	Unit 10	19,781	6,754
Unit AA	70,137	Unit 31	7,740	22,596
		Unit 32	1,470	
		Unit 33	38,331	
Unit BB	106	n/a	-	106
<b>All Units*</b>	<b>437,299</b>	<b>All Units</b>	<b>271,016</b>	<b>166,283</b>

\* Land ownership and State land use district acreage totals in Table Add-2 may not equal total acres due to digital mapping discrepancies between TMK data and USGS coastline or due to rounding.

**Table Add-2: Big Island Plants Proposed and Intended Critical Habitat: Acreage Differences, by Land Ownership and State Districting**

DEA = Draft Economic Analysis

Item	DEA Acres	Addendum Acres	Change
<b>Land Ownership*</b>			
Federal	142,600	78,090	64,511
State	217,917	160,001	57,916
State DHHL	5,405	858	4,547
County	11	-	11
Private, Major Owner	69,926	31,742	38,184
Private, Minor Owners	1,055	158	897
State/County Roads	383	167	216
<b>State Land Use Districts*</b>			
Conservation	366,884	230,163	136,721
Agricultural	69,518	40,098	29,420
Urban and Rural	899	755	144

\* Land ownership and State land use district acreage totals may not equal total acres in Table Add-1 due to digital mapping discrepancies between TMK data and USGS coastline or due to rounding.

### **3. DIRECT COSTS**

As noted above, the Service indicates that it intends to remove 166,283 acres (38 percent) from critical habitat for biological reasons. These changes would affect some of the direct costs estimated in the DEA. As such, this section revisits the costs affected and derives new costs according to the intended modifications. The DEA costs, the revised Addendum costs, and an explanation for the changes are presented in Table Add-3 at the end of the Addendum.

Unless otherwise noted, the number of consultations and the anticipated project modifications mentioned in the DEA and the Addendum are based on the professional judgment of the team of consultants that prepared these reports. This judgment is based upon discussions with the Service; review of historical section 7 consultation files for the listed plants and other species; discussions with appropriate landowners, agencies, and stakeholders; and other supporting documentation.

#### **3.a. Residential Development – Department of Hawaiian Homelands**

Chapter VI, Section 3.b.(1) of the DEA presented estimates of future consultation and project modification costs associated with the development on Department of Hawaiian Home Lands (DHHL) land as a result of lessee participation in U.S. Department of Housing and Urban Development (HUD) loan insurance and guarantee programs. The DEA noted that portions of two DHHL parcels in the proposed critical habitat were identified as priority parcels for development in the 2002 DHHL *Hawai'i Island Plan*. These two parcels include the Kealakehe parcel in proposed Unit Y2 and the Humu'ula-Upper Pi'ihonua parcel in proposed Units E, F, and G. Portions of some non-priority parcels were also included in the proposed designation, but since the *Hawai'i Island Plan* indicates that non-priority parcels are not likely to be developed in the next 20 years, any development in these parcels is outside of the timeframe of the analysis.

The Service indicates that it intends to remove the Kealakehe parcel and the Humu'ula-Upper Pi'ihonua from critical habitat for biological reasons. As such, this analysis determines that the section 7 consultation costs and the associated project modification costs mentioned in the DEA will not occur.

#### **3.b. Residential Development – Villages at La'i'opua (VOLA)**

Chapter VI, Section 3.b.(2) of the DEA discussed the development of homes by the State Housing and Community Development Corporation of Hawai'i (HCDCH) in proposed Unit Y2 as part of the Villages at La'i'opua (VOLA) project. The DEA noted that the VOLA project did have *Federal involvement* in 1990 because U.S. Environmental Protection Agency (EPA) funds were used to build an off-site wastewater treatment plant, but that once the plant was completed, the *Federal involvement* for the project ended. Because there was no other known *Federal involvement* for this planned development, the DEA did not estimate any section 7 costs associated with the project.

During public comment, HCDCH stated that while the VOLA project has no current *Federal involvement*, it may have *Federal involvement* in the future in the form of Federal funding for development of affordable rental and for-sale housing. HCDCH noted that future *Federal involvement* and any associated consultations could result in section 7 costs and costly project modifications that could impact the financial feasibility of their project. Moreover, while these costs could be avoided by foregoing *Federal involvement*, this action would negatively impact the agency by preventing it from taking advantage of available Federal sources of funding.

As a result of further discussions with HCDCH and a review of the Service's record regarding the VOLA project, this analysis concludes that no section 7 consultations are anticipated in the next 10 years. First, HCDCH is not currently seeking Federal funding for the project and was unable to identify specific potential Federal funding programs. Second, the U.S. Department of Housing and Urban Development (HUD) indicates that there are currently no competitive grant programs for the development of affordable housing, and that there are not likely to be any in the near future (HUD, 2003). Third, the U.S. Department of Agriculture Rural Housing Service (RHS) has a loan guarantee program and a competitive loan program for the development of affordable housing, but this program is used primarily by individual homeowners and has never been used by State and county agencies in Hawai'i (RHS, 2003). Thus, because there is no reasonably foreseeable Federal involvement for the VOLA development, no section 7 consultations are anticipated.

### **3.c. Other Residential Development – Agricultural and Conservation District**

Chapter VI, Section 3.b.(3) of the DEA discussed residential development in the Agricultural District within the proposed designation. Specifically, the DEA concluded that private agricultural land in proposed Units E, M3, O, V, Y1, and Z could be subdivided at some point in the future, but concluded that section 7 consultations for these subdivisions were not anticipated because there was no *Federal involvement*.

In the intended designation, Units M3 and V have been removed completely and all of the private agricultural land in Units E and O has also been removed. All of the land planned for subdivision in Unit Z is also no longer included in the intended designation. As noted above, because there was no known *Federal involvement* for the planned residential development in these units, the DEA did not estimate any section 7 costs associated with the planned development. As such, the Addendum acknowledges the intended modifications to the critical habitat designation, but makes no changes to the cost estimate presented in the DEA.

Most of Unit Y1 remains in the intended designation as intended Unit 12. During public comment, MID Corporation and TSA Corporation (MID/TSA), the owner of most of the land in Unit Y1, indicated that it intends to develop portions of proposed Unit Y1 within the next 10 years. MID/TSA stated that the development would involve both residential and other uses as part of the implementation of its 1987 master plan for development of the Kaloko Properties and the 1996 Final Environmental Impact Statement (EIS) for the Kaloko Town Center. MIS/TSA indicates that it withdrew entitlement applications for the Kaloko Town Center due to unfavorable economic conditions. As such, all of the land planned for residential development currently remains either in the Agricultural District or the Conservation District.

MID/TSA indicates that it plans to build approximately 420 single-family units on 91 acres and 1,060 multi-family units on 106 acres in intended Unit 12 (proposed Unit Y1). However, there is no known *Federal involvement* for this planned development. Thus, no section 7 consultations or project modifications for this project are anticipated. As such, the Addendum acknowledges the new information, but makes no changes to the cost estimate presented in the DEA.

**3.d. Industrial, Commercial, and Other Urban Development- Kohanaiki Business Park Expansion**

Chapter VI, Section 3.c.(2) of the DEA discussed the planned Kohanaiki Business Park expansion within the proposed Unit Y1. The Service indicates that it intends to remove the land planned for the Kohanaiki Business Park expansion from critical habitat for biological reasons. Because there is no known *Federal involvement* for this project, the DEA did not estimate any section 7 costs associated with the planned development. As such, the Addendum acknowledges the intended modifications to the critical habitat designation, but makes no changes to the cost estimate presented in the DEA.

**3.e. Industrial, Commercial, and Other Urban Development- Kaloko Industrial Park Expansion**

Chapter VI, Section 3.c.(3) of the DEA discussed the planned Kaloko Industrial Park expansion within the proposed Unit Y1. During public comment, MID/TSA indicated that the developer of the Kaloko Industrial Park expansion is TSA Corporation, not TSA International, Ltd., as stated in the DEA. The landowner also mentioned that the county zone change allowing for commercial-industrial mixed use development has been granted and is no longer pending as reported in the DEA.

The DEA determined that no *Federal nexus* existed for this project and so did not anticipate consultation or project modification costs. Neither subsequent research nor public comment has suggested the presence of a *Federal nexus*. Thus, no section 7 consultations or project modifications for this project are anticipated. As such, the Addendum acknowledges the new information, but makes no changes to the cost estimate presented in the DEA.

**3.f. Industrial, Commercial, and Other Urban Development- Kaloko Town Center**

Chapter VI, Section 3.c. of the DEA discussed industrial, commercial and other urban development planned within the proposed designation. During public comment, MID/TSA provided information regarding the Kaloko Town Center, which is an office, commercial, retail, school, and park project that was not examined in the DEA. MID/TSA indicates that 4.4 acres of intended Unit 12 (proposed Unit Y1) are planned for office/commercial/retail uses; 6.9 acres are planned for commercial/retail uses; 17.1 acres are planned for a school/park site; and 10 acres are planned for a park. There is no known *Federal involvement* for this planned development, so this analysis anticipates no section 7 consultations or project modifications for this project. As such, the Addendum acknowledges the new information, but makes no changes to the cost estimate for industrial, commercial and other urban development presented in the DEA.

### **3.g. Ranching Operations**

Chapter VI, Section 3.d. of the DEA discussed potential impacts to agricultural activities. As mentioned in the DEA, approximately 36,900 acres of land identified in the 1977 State Department of Agriculture's *Agricultural Land of Importance to the State of Hawai'i* (ALISH) study are contained in the proposed designation. Based on the number of acres of important agricultural land in the proposed critical habitat and the number of farmers and ranchers on the Big Island who participate in U.S. Department of Agriculture (USDA) Farm Service Agency (FSA) loan programs each year, the DEA calculated the number of section 7 consultations likely to occur in the next 10 years.

The State Department of Agriculture (Hawai'i DOA) identified several areas in the proposed designation that may be used for growing papayas and macadamia nuts. The Service indicates that, for biological reasons, it intends to remove these areas used by farmers from the designation. Thus, ranching is the primary agricultural activity in the intended designation.

The intended designation contains 24,270 acres of important agricultural lands used for ranching. Using the same methodology that was used in the DEA, this analysis estimates that approximately four ranchers in the intended designation will participate in FSA loan programs over the next 10 years.

Potential Project or Activity, next 10 years: FSA Farm loans and loan guarantees

Federal Involvement: FSA funding or oversight

#### Consultations and Costs

FSA indicates that for direct loans, individual ranchers will be included in the section 7 consultation process and, for loan guarantees, the lending agency will be included in the consultation.

- Total Section 7 Costs: \$38,800 to \$82,400

Estimate is based on the following: (1) four FSA Farm Operating loans or loan guarantees over the next 10 years; (2) Low to Medium cost (from Table VI-1 in the DEA) of a consultation with a Federal agency as the Applicant and the involvement of a non-Federal entity; and (3) four biological surveys of 100 acre open sites with easy to medium access (from Table VI-2 in the DEA).

#### Anticipated Project Modifications and Costs:

- Total Section 7 Costs: None

With respect to ranching, this analysis estimates that grazing is unlikely to impact the listed plants. Any listed plants or the *primary constituent elements* are likely to be inaccessible to cattle due to fences, lava flows, gulches, steep cliffs or hills. As long as these barriers are not removed or altered, the Service indicates that grazing can continue in critical habitat. This analysis has identified no plans to open up new areas to grazing or to alter the existing barriers in critical habitat,



and so concludes that critical habitat will likely not affect continued grazing. Since all future loans and loan guarantees in the intended designation are likely to be used to support ranching, this analysis anticipates no project modifications.

Potential Entities Impacted:

*Federal:* Service, FSA

*Private:* Individual ranchers

**3.h. Military Activities – Pohakuloa Training Area (PTA)**

Chapter VI, Section 3.f. of the DEA discussed the current and future military activities at Pohakuloa Training Area (PTA). PTA encompasses approximately 109,000 acres, although 51,000 of these acres cover what is known as the impact area and are not suitable for training maneuvers due to unexploded ordinance and other concerns. Approximately 53,800 acres of PTA were included within the proposed Unit AA. None of the 51,000-acre impact area is included in the proposed critical habitat. As such, proposed critical habitat covered almost 93 percent of the 58,000 acres available for maneuvers and special uses.

The Service indicates it intends to modify proposed Unit AA for biological reasons. Specifically, the Service intends to remove 16,000 acres from the designation in the northern corridor of PTA that are heavily used for training. This intended modification will split proposed Unit AA into intended Units 31, 32, and 33. This information, combined with information provided by the Service since the publication of the DEA, changes the cost estimates for military activities that were presented in the DEA. The revised discussion and cost estimates are presented below.

Potential Projects or Activities, Next 10 Years: Maneuver exercises, bivouac, weapons live-fire, and aviation training, construction of two ranges, installation of utility lines, upgrading of existing roads, expansion of the use of Keamuku property, and off-road vehicle use (more information on these activities are provided in the DEA).

Training activities on PTA are generally either month-long exercises by Army or Marine Corps battalions, or weekend or three-week exercises by Army Reserve and Hawai'i Army National Guard units. The four types of major training activities that potentially impact critical habitat are maneuver exercises, bivouac, weapons live-fire, and aviation training. A brief description as well as the potential adverse impacts of these activities are summarized in the DEA.

Many of the current activities at PTA are expected to continue in a similar manner over the next 10 years, with the exception of the activities associated with "transformation." The Army defines transformation as "creating an Army to meet the defense challenges of the future, while maintaining a trained and ready force to meet today's commitments." As part of transformation, the Army has proposed to transform the 25th Infantry Division (Light) at Schofield Barracks into one of several nationwide Stryker Brigade Combat Teams (SBCT) (formerly known as Interim Brigade Combat Team or IBCT).<sup>3</sup>

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<sup>3</sup> However, the selection is conditional on the successful outcome of an Army Programmatic Environmental Impact Statement (PEIS).

The Army indicates that transforming the 2nd Brigade, 25th Infantry Division (Light) would result in force structure and facility changes that may have the potential to impact various Army installations and training lands in Hawai'i. Specifically, the Army indicates that transformation would add 480 soldiers and 400 new light wheeled vehicles (called Stryker vehicles) to the Division. Training of the SBCT (i.e., use of the Stryker vehicles) is slated to take place at PTA. While all of the specific transformation projects and activities discussed in the DEA are likely to impact the intended designation (except the Tactical Vehicle Wash), the Service indicates that the activity with the largest potential impact to the intended designation is the off-road use of the Stryker vehicles.

Federal Involvement: Army ownership or use of land and facilities; U.S. Marine Corps, U.S. Navy, U.S. Air Force use of the land; military and other Federal funding of projects and activities.

Other Critical Habitat/Listed Species: All 1,470 acres of intended Unit 32 in the northeast portion of PTA overlaps with *palila* critical habitat. The *palila*, four other endangered birds, and the endangered Hawaiian hoary bat are also found on PTA, but the Service does not consider these birds residents of the area.

Other Land Management: Integrated Natural Resources Management Plan (INRMP)

As discussed in Chapter IV of the DEA, the Army has developed an INRMP for PTA. Its purpose is to integrate the mission of each military area with stewardship of the natural resources, including any listed species found in the area.

#### Consultations and Costs

Soon after the publication of the DEA, the Army submitted a biological assessment of the impacts of its current activities on the plants as part of a programmatic section 7 consultation. Subsequently, the Army withdrew the biological assessment and is developing a new biological assessment for both current activities and transformation. Once the Army submits this biological assessment, a programmatic section 7 consultation on current activities and transformation will commence. In addition, the Service indicates that another programmatic consultation is likely to occur in the next 10 years. The Army currently monitors and manages endangered plant populations on PTA, so the Service indicates that separate biological surveys will not be required as part of the section 7 consultation process.

Since these programmatic consultations will cover large areas (greater than 50,000 acres), many different types of projects, and involve many listed species, the Army's costs are expected to be high. As such, each consultation is expected to involve twice the high cost from Table VI-1 in the DEA of a consultation with a Federal agency as the applicant, or \$41,400 (2 \* \$20,700).

- Total Section 7 Cost: \$82,800

The estimate is based on: (1) two programmatic section 7 consultations in the next 10 years; (2) twice the High cost from Table VI-1 in the DEA of a consultation with a Federal agency as the Applicant (2 \* \$41,400); and (3) no biological surveys because the Army monitors and manages

endangered plant populations as part of its ongoing management activities. This analysis conservatively assigns all the consultation costs to the plants, even though the consultation may also address listed wildlife species that may be present.

#### Anticipated Project Modification and Costs:

- Total Section 7 Costs: \$30 million to \$40 million, plus un-quantified costs associated with possible training activity restrictions

As part of the development of the INRMP for PTA finalized in 2001, the Army identified a series of ecosystem management projects that it anticipates will result from the current programmatic section 7 consultation with the Service. Most of these projects are designated with a funding class of "Other Environmental" or "Class 3." These projects are needed to address overall environmental goals and objectives at PTA, but they are only implemented when funding becomes available. If the Army includes these projects as part of the project description in a biological assessment for a section 7 consultation, or if the Service lists them as reasonable and prudent alternatives in a biological opinion of a section 7 consultation, the Army will change their funding class to "Must Fund", "Class 1," or "Class 2" (Chapters III and VI of the DEA present detailed discussions of section 7 consultations and project modifications). Projects with this funding class will be funded and completed by established deadlines. Without a section 7 consultation, these projects would likely remain "Class 3" and may not be funded or completed in the next 10 years. As such, it is conservatively assumed that all of the costs associated with these projects are attributable to section 7 and not the baseline protections described in Chapter IV of the DEA.

#### Current Activities

The ecosystem management project modifications the Army anticipates may result from the current section 7 consultation include: 1) management of rare plant and animals, and 2) the management of threats from human land use, invasive plants, feral ungulates, and other non-native species. The Army also anticipates certain conservation education and outreach activities will be included in the biological opinion. The Army estimates that the costs to implement the minimization/conservation measures in a recent draft of the biological assessment of current activities will range from \$2 million to \$3 million per year.

#### Future Activities

As noted above, the current section 7 consultation will also address planned (i.e., future) activities associated with transformation. The Army estimates that the cost of implementing the minimization/conservation measures (e.g. project modifications) in a draft of the biological assessment of transformation activities will cost roughly \$1 million per year.

Critical habitat may affect the cost of the project modifications. For example, if vehicles are able to maneuver in areas where there are no listed species but are included in critical habitat, then there are not likely to be additional costs associated with critical habitat. However, if the Service states that vehicles cannot maneuver in the intended designation, regardless of the presence of listed species, then the value of the training opportunities at PTA would decrease. In particular, the Army indicates that restrictions on training at PTA could result in the following:

- Lower quality training exercises or delays in the final combat readiness of the SBCT;
- Inability to maintain specific proficiencies that are critical to wartime performance; and
- Impairment of the servicemen's ability to respond quickly and accurately to enemy fire and in offensive operations.

The Army maintains that without these vital skills, the lives of the servicemen are at risk and national security is diminished. While these impacts are not readily quantifiable, it is possible that they could be significant.

On the other hand, the Service indicates that only areas that contain the *primary constituent elements* in critical habitat are subject to section 7 consultation. It is not known if the specific areas planned for future transformation vehicle maneuvers contain the *primary constituent elements*. However, the Army has identified portions of the intended designation (the north western half of intended Unit 31 and the north eastern portion of intended Unit 33) as "mission essential." Based on previous consultations at PTA regarding the *palila* critical habitat, this analysis concludes that it is unlikely that the Service will restrict all access to these areas. Instead, the analysis assumes that a section 7 consultation may result in restrictions on certain types of maneuvers or a requirement that the vehicles travel on specific paths.

#### Summary

The total section 7 project modification costs associated with military activities at PTA include \$2 million to \$3 million per year regarding current operations, and \$1 million per year for transformation activities. As such, the total section 7 project modification costs range from \$30 million to \$40 million over 10 years. Most of these costs are estimated from biological assessments drafted prior to the designation of critical habitat, so at least a portion of the costs are attributable to the listing of the plants as endangered. This analysis also recognizes that additional impacts could include a potential reduction in national security as a result of possible training limitations. These additional impacts may be attributable to critical habitat.

#### Potential Entities Impacted:

*Federal:* Service, Army, Navy, Marines, Air Force  
*State:* Hawai'i National Guard

#### **3.i. State Managed Areas - Hapuna Beach State Recreation Area**

Chapter VI, Section 3.h.(1) of the DEA discussed economic impacts associated with Hapuna Beach State Recreation Area. Specifically, the DEA recognized that the State Department of Land and Natural Resources (DLNR) plans to expand the recreation area into proposed Unit C. The Service indicates that it intends to remove all of Unit C from critical habitat for biological reasons. Because there is no known *Federal involvement* for this project, the DEA did not estimate any section 7 costs associated with the planned development. As such, the Addendum acknowledges the intended modifications to the critical habitat designation, but makes no changes to the cost estimate presented in the DEA.

### **3.j. Roads - Saddle Road Improvement and Realignment**

Chapter VI, Section 3.i.(1) of the DEA discussed the Saddle Road improvement and realignment project. The planned realignments would have directly impacted approximately 12.7 miles of proposed Unit AA and the planned improvements would have directly impacted 7.8 miles of Unit G. The DEA indicated that a section 7 consultation regarding the Saddle Road project had already been completed, but that a conference regarding critical habitat or reinitiation of the completed section 7 consultation was likely to occur in the next 10 years. The DEA estimated the cost of the conference/reinitiation at \$20,700. The DEA also presented an estimate of the costs of the project modifications that were developed during the completed section 7 consultation. Since these project modifications were developed prior to the designation of critical habitat, the DEA attributed them to the section 7 jeopardy provision and not to critical habitat. The DEA estimated the cost of these project modifications associated with the completed consultation at approximately \$3.7 million over the next 10 years.

As clarified by the Service, the cost of these project modifications are associated with a completed section 7 consultation that pre-dated critical habitat designation. Accordingly, the \$3.7 million described above is now attributed to the baseline and is not included in the total section 7 costs for the Saddle Road improvement and realignment project.

The Service indicates that it intends, for biological reasons, to remove some of the areas affected by the planned Saddle Road improvements and realignment project from critical habitat. With the intended modifications, one segment of the realignment will directly affect approximately 0.3 miles of intended Unit 33, another segment of the realignment will be just south of approximately 3.4 miles of intended Unit 32, and one segment of improvements will directly affect approximately 7.8 miles of intended Unit 29.

Because the Saddle Road conference/reinitiation is anticipated to occur regardless of the size of the intended designation, this Addendum makes no changes to the estimated administrative costs of the future conference/ reinitiation as presented in the DEA. However, the size of the intended designation does affect project modification costs associated with the future conference/reinitiation because these costs are based on the amount of the proposed critical habitat that is intersected by or directly adjacent to the planned Saddle Road realignments and improvements. The DEA estimated the project modifications costs associated with the future conference/reinitiation to range from \$3.4 million to \$4.3 million. The revised costs are presented below:

- **Minimization of Fire Hazard:** As mentioned in the DEA, the Federal Highways Administration (FHWA) may agree to construct an eight-foot paved shoulder along certain portions of the planned realignments in order to reduce fire hazard in critical habitat. FHWA has already included this project modification near intended Unit 32 in its plans to protect designated critical habitat for the *palila*, an endangered forest bird. Based on the intended designation, FHWA would only have to construct the additional shoulder along both sides of 0.3 miles of the planned realignment to minimize fire hazard in intended Unit 33. This equals roughly 25,350 square feet of additional pavement (2 sides x 0.3 miles x 5,280 feet per mile x 8 foot shoulder). As mentioned in the DEA, based on a review of road projects

across the State, an additional square foot of pavement costs roughly \$8 to \$10 to construct. As such, the additional construction costs will range from \$203,000 to \$254,000.

- **Conservation Set-Aside:** Both the proposed designation and the intended designation cover the same segment of the eastern portion of the Saddle Road improvement project. As such, the \$36,000 to \$144,000 associated with a conservation set aside presented in the DEA is applicable to the intended critical habitat designation.

In summary, a conference/reinitiation is likely to occur as a result of critical habitat and will cost roughly \$20,700. Additional project modifications may result from the future conference/reinitiation. The costs of the additional project modifications are estimated to range from \$239,000 to \$398,000 over the next 10 years (\$203,000 + \$36,000; \$254,000 + \$144,000).

### **3.k. Roads - Keahole to Keauhou (K-to-K) Region**

Chapter VI, Section 3.i.(2) of the DEA discussed the planned road projects in the K-to-K region. These projects included constructing the Ane Keohokalole Highway, constructing Main Street, and widening the Queen Ka'ahumanu Highway. The DEA estimated that the FHWA would initiate one consultation for each of these three road projects.

The DEA estimated that constructing Main Street would directly affect about 5.8 acres of proposed Unit Y1 (intended Unit 12). To offset the direct effects to critical habitat, the DEA assumed that the FHWA may purchase 12 to 17 acres of unplanned land in proposed Unit Y1 owned by the MID Corporation and donate the land to the National Park Service. The DEA estimated that the cost to purchase the land would range from \$180,000 to \$340,000 and that the county would lose \$8,865 to \$16,745 in tax revenues as a result. However, since the publication of the DEA, MID commented that it has plans to develop this land. As such, the land purchase and donation would not be feasible so the costs of the purchase and, thus, the lost tax revenues would not be incurred. Therefore, the \$10.7 million to \$15.7 million total project modification cost estimated in the DEA is adjusted to \$10.5 million to \$15.3 million (\$10.7 million - \$188,865; \$15.7 million - \$356,745).

### **3.l. Conservation Activities - USDA Conservation Programs**

Chapter VI, Section 3.j.(2) of the DEA discussed the USDA's FSA and Natural Resources Conservation Service (NRCS) conservation projects. The DEA estimated that between zero and 20 farmers and ranchers in critical habitat may participate in USDA conservation projects over the next 10 years. This estimate was based on the amount of agricultural land identified as "important" in the 1977 State Department of Agriculture's ALISH study that is included in the proposed designation.

As mentioned in Section 3.g. above, the Service indicates that it intends to modify critical habitat to remove farmland and some of the important agricultural land for biological reasons. Approximately 24,270 acres of important agricultural land, or four percent of the total 553,200 acres of important agricultural land on the Big Island, remains in the intended designation. As mentioned in the DEA, over the past five years, approximately 77 farmers or ranchers received conservation

funding on the Big Island. Assuming that the number of awards is evenly distributed across the important agricultural land, this analysis estimates that approximately three ranchers (77 \* 4 percent) in the intended critical habitat would receive funding over the next five years. Thus, a total of six financed projects in the intended critical habitat could be expected over the next 10 years.

The annual number of recipients may increase, however, due to increased funding and more inclusive criteria outlined in the 2002 Farm Bill (NRCS, 2002). At the same time, however, some of the landowners with land inside the proposed and/or intended critical habitat who would be eligible to participate in these programs have indicated an intention to avoid participation in federally funded conservation activities to avoid a *Federal nexus* (the costs of the avoided participation in conservation activities were discussed in the “Loss of Conservation Projects” subsection in Section 4 (Indirect Costs) in the DEA). Thus, to account for both possible scenarios, this analysis estimates that between zero and 12 projects located in the intended critical habitat will receive funding over the next 10 years.

Potential Project or Activity, next 18 years: NRCS and FSA conservation projects

Federal Involvement: Partial USDA funding

Consultations and Costs

- Total Section 7 Costs: \$0 to \$45,600

Estimate is based on (1) zero to 12 conservation projects, (2) Low cost (from Table VI-1 in the DEA) of a consultation with a Federal agency as the Applicant, and (3) no biological survey. All past biological assessments in Hawai‘i have been done by NRCS staff. Individual ranchers are notified about the consultations but are generally not directly involved in the consultation process for conservation projects (NRCS, FSA, 2002).

Anticipated Project Modifications and Costs: Minor

In general, NRCS and FSA conservation projects are designed to reduce soil erosion, conserve water, and enhance wildlife habitat. These kinds of projects benefit the plants since they improve the general ecosystem and indirectly encourage the growth of the plants. While the Service may recommend minor changes, such as avoiding listed plant populations or having a biologist on-site when finalizing details such as fencing routes, a review of completed conservation projects across the State indicates that this type of monitoring is standard practice in biologically sensitive areas. Thus, no major project modifications are anticipated.

Potential Entities Impacted:

*Federal:* Service, NRCS, FSA

### **3.m. Kealakehe 2020**

During the public comment period, new information was provided regarding a project in intended Unit 13 (proposed Unit Y2) planned by the non-profit Kealakehe Ahupua‘a 2020 (K2020) organization. K2020 states that the organization’s goal is to use local resources to enhance

community and economic development and to solve certain environmental problems. One current environmental problem on the organization's agenda is the remediation of an old, capped county landfill. This landfill sustains internal fires that are caused by bacteria in the decomposing rubbish; in fact, the county has identified 11 separate fires within the landfill. K2020 plans to extinguish the fires, process the landfill material, and use the material to build a golf course and wetland lagoon at a separate site.

While the burning county landfill is not included in the intended designation, intended Unit 13 is adjacent to the landfill on three sides (an existing police station and transfer station are adjacent to the landfill's fourth side). In order to extinguish the internal fires, K2020 plans to obtain funding through the Superfund program administered by the U.S. Environmental Protection Agency (EPA). With this funding, K2020 plans to bulldoze all of the burning material on to the State owned parcel to the north of the landfill in intended Unit 13 and extinguish the fires. Then the remaining material will be restacked, processed, and used for various projects, including a municipal golf course planned in intended Unit 13. This remediation project is in the preliminary planning phases, but K2020 plans to begin the project within three years.

Potential Project or Activity, next 18 years: Extinguishing the fires in the old county landfill north of Kona

Federal Involvement: EPA and potentially other Federal funding and permitting

#### Consultations and Costs

- Total Section 7 Costs: \$20,200

Estimate is based on (1) one fire control project, (2) Medium cost (from Table VI-1 in the DEA) of a consultation with a non-Federal agency as the Applicant, and (3) one biological survey of a medium sized open area with easy access (from Table VI-2 in the DEA)

#### Anticipated Project Modifications and Costs:

- Total Section 7 Costs: \$5.1 million

The K2020 planned project will have a long-term benefit to the listed plants in intended Unit 13 by reducing the potential for unexpected wildfires. However, the short-term impacts would include: 1) the loss of an undetermined amount of critical habitat and 2) increased fire potential for the remaining critical habitat when the material from the landfill is bulldozed. In order to offset these impacts, this analysis identifies the following as a reasonably foreseeable project modification: K2020 would agree to establish the two planned preserves in intended Unit 13 that are identified in the State VOLA master planned community (see Chapter VI, section 3.b. of the DEA). The two



preserves total roughly 38 acres. A preliminary estimate prepared by the Service indicates that the cost to intensively manage these two preserves for 10 years is roughly \$135,000 per acre, or \$5.1 million total for 38 acres.<sup>4</sup> These preserves also would provide fire protection if they were established before the landfill project, because they include buffer zones and firebreaks around the listed plant individuals. The Service agrees that this project modification would help to offset potential adverse effects to the listed plants.

After the fires are extinguished and the material is processed or restacked on the landfill site, the Service indicates that it may suggest that K2020 restore to their original state the portions of critical habitat that were bulldozed. K2020 plans to restore the area for multiple uses, including a preserve for endangered plants and animals, a golf course, and an educational site to teach students in the community about the native flora and fauna as well as how to play golf and how to maintain a golf course. K2020 plans to include the Service in the planning process of this project. Since the restoration of the disturbed land is one of the baseline goals of K2020, this analysis assumes that the additional costs attributable to the intended designation will be small.

Potential Entities Impacted:

*Federal:* Service, EPA

*Private:* K2020

#### **4. INDIRECT COSTS**

As noted above, the Service indicates that, for biological reasons, it intends to modify the critical habitat designation. These changes would affect some of the indirect costs discussed in the DEA. As such, this section revisits the indirect costs affected. An explanation for the specific changes is presented in Table Add-3 at the end of the Addendum.

As noted in the DEA, because consultation under section 7 only applies to activities that have *Federal involvement*, the designation of critical habitat alone does not afford any additional protections for listed species with respect to strictly private activities. However, the DEA also recognized that designation of critical habitat may have indirect impacts beyond those associated with the Act based on the interplay of critical habitat designation with State and local laws. For example, potential indirect impacts raised by stakeholders include imposition of conservation management obligations, redistricting of Agricultural land into the Conservation District, and reduced property values.

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<sup>4</sup> K2020 has indicated that it plans to apply for Federal grants for its planned activities, so the total cost of \$5.1 million over 10 years could be an expansion to Hawai'i's economy. However, if the \$5.1 million is transferred from funds that were going to be spent in Hawai'i anyway, there will be no expansion in Hawai'i's economy. This concept is discussed in detail in Section 6.b.(1) of the DEA and in Section 6.b below.

#### **4.a. State Redistricting of Land**

Chapter VI, Section 4.c. of the DEA discussed the concern that once critical habitat is designated, the State may redistrict it from the Agricultural, Rural or Urban District to the Conservation District. In particular, the DEA noted the concern that this could result in (1) a potential loss in current or future economic use of the land; (2) a reduction in value of the land; and (3) reduced ability to secure financing.

##### **4.a.(1) Likelihood of State Agency-Initiated Redistricting**

The DEA recognized that the concern about potential redistricting of land designated as critical habitat stems from the interplay between two State statutes, HRS chapter 195D and HRS chapter 205. Specifically, HRS 195D-5.1 provides that DLNR “shall initiate amendments to the Conservation District boundaries ... in order to include high quality native forests and the habitat of rare native species of flora and fauna within the Conservation District.” HRS 205-2(e) defines the Conservation District, and provides that, among other areas, it shall include areas necessary for “conserving indigenous or endemic plants, fish and wildlife, including those which are threatened or endangered.” In addition, the DEA noted that critical habitat could prompt the Department of Business, Economic Development and Tourism’s (DBEDT’s) Office of Planning (OP) to consider a petition to the State Land Use Commission (LUC) to redistrict land from the Agricultural, Rural or Urban Districts to the Conservation District. This would likely occur during the periodic review of State District boundaries.

The DEA concluded that the State agency initiated redistricting of privately owned land was likely to occur in only a limited number of cases. The Addendum makes no changes to this conclusion. This assessment is based on the following:

- State law only permits State and county departments and agencies and persons with a property interest in the land to be reclassified to petition for redistricting (HRS 205-4).
- Further, the plain language of the State statutes contains no reference to designated critical habitat. Unlike the automatic conferral of State law protection for all federally listed species, State law does not require initiation of the amendment process for all federally designated critical habitat. (Compare HRS § 195D-5.1 with HRS § 195D-4(a)).
- Private landowners typically oppose proposals to redistrict their lands if they believe this might result in a decrease in property value and/or a loss in the economic use of their lands (Discussions with landowners, 2002).

- The LUC must hold a hearing on all petitions to redistrict areas greater than 15 acres, and must admit as intervening parties all persons who have some property interest in the land, thus giving private property owners opposing redistricting the opportunity to present evidence (HRS 205-4).
- While the LUC is specifically directed to consider the impact of the proposed reclassification on “the preservation or maintenance of important natural systems or habitats,” it is also specifically directed to consider five other impacts in its decision:
  - (1) the “maintenance of valued cultural, historical, or natural resources;”
  - (2) the “maintenance of other resources relevant to Hawai‘i’s economy, including, but not limited to, agricultural resources;”
  - (3) the “commitment of State funds and resources;”
  - (4) the “provision for employment opportunities and economic development;” and
  - (5) the “provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups.” (HRS 205-17).

In this case, redistricting all the land within the intended critical habitat designation could impact the commitment of State funds and resources (e.g., VOLA project; road projects); the provision for employment opportunities and economic development (e.g., Kaloko Industrial Park; Kaloko Properties); and the provision of housing opportunities for all income groups (e.g., VOLA project).

- Approval of redistricting requires six affirmative votes from the nine commissioners, with the decision based on a “clear preponderance of the evidence that the proposed boundary is reasonable.” (HRS 205-4).
- In the last State District boundary review, only five privately owned parcels were redistricted to Conservation, even though several hundred parcels were proposed for redistricting. This included a stream and a portion of a watershed on Maui, two beaches on Kaua‘i, and a pu‘u (small crater) on the Big Island.
- Finally, not all designated critical habitat is in Conservation District. For example, all or portions of existing critical habitat for two listed plant species (*Gouania hillebrandii* and *Kokia drynarioides*), both designated in 1984, are within the State’s Agricultural District.

Based on the foregoing, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting land into the Conservation District for lands that have high economic value to the community. These lands include lands with significant State investments, land planned for the economic and community development, and land planned for the provision of housing.

However, the intended designation also contains private Agricultural and Urban District land that is not prime agricultural land and is not currently planned for development that will enhance community or economic development. This analysis estimates that it is reasonably foreseeable that the LUC will redistrict some or all of this land to the Conservation District as a result of the intended designation.

#### **4.a.(2) Likelihood of Court-Ordered Redistricting**

As discussed in the DEA, if a State agency (either the OP or DLNR) does not petition the LUC to redistrict land in critical habitat to the Conservation District according to HRS 205-2(e), then there is a risk that (1) a third party would file one or more lawsuits to force such petitions and (2) the lawsuits could be successful. This assessment is based on conversations with landowners, environmental groups, and others familiar with the subject. However, even if the lawsuit is successful, it would still be up to the LUC to determine which parcels to redistrict, as mentioned above.

If the LUC does not redistrict land in critical habitat to the Conservation District, a third-party could challenge the LUC decisions in court

However, as mentioned above, certain parcels in the intended designation are not planned for development that is economically valuable to the community. This analysis assumes that a lawsuit filed to mandate redistricting for these parcels has a higher probability of success.

#### **4.a.(3) New Restrictions on Land to Avoid Redistricting**

As mentioned above, the probability is low that certain parcels that have high economic value to the community will be redistricted to the Conservation District. However, since the economic value of these parcels are high, this analysis assumes that it is reasonably foreseeable that landowners may enter into agreements with the State to reduce the probability of redistricting to zero. Support for this assumption is as follows:

- While State law only permits State and county departments and agencies and persons with a property interest in the land to be reclassified to *petition* for redistricting, additional intervening parties, individuals, and representatives from community groups can testify regarding the proposed redistricting (HRS 205-4). In the past, these hearings have become a forum for many of the community's concerns regarding land uses and the preservation of the environment to be heard.
- The LUC decisions can be influenced by a variety of factors, over which the landowner has no control.

- During the last boundary review, several landowners made agreements with the State in order to retain their existing State District designation. For example, these agreements included commitments to reforest lands using native species or not to subdivide or develop land that is habitat for listed species. Subsequently, the State did not redistrict these parcels to the Conservation District.

Based on these factors, this analysis assumes that some landowners may enter into agreements with the State in order to reduce the probability of redistricting to zero. The economic costs of these agreements will depend on the characteristics of the habitat, the final development plans, and the negotiations between the landowners and the State. There is a currently a considerable amount of uncertainty regarding these factors. In order to illustrate the possible economic impacts of these restrictions on the land, this analysis presents the example of a loss of 10 percent of the value of the portions of the planned development in the intended designation. In most cases, the value of the planned development is calculated in the Chapter VI, Section 4.c. of the DEA as a combination of previous investments and future profits. The illustrative example of the economic loss associated with restrictions on the land for each planned development is presented below.

#### **4.a.(4) Affected Land**

As mentioned in the DEA, there were several development projects planned in the proposed critical habitat. These projects included the State VOLA master planned community, DHHL housing projects, the PIA subdivision, the Keahuolu project, the Kohanaiki Business Park expansion, and the Kaloko Industrial Park Expansion.

Several of these projects are not included in the intended designation. These include the DHHL housing projects, the PIA subdivision, and the Kohanaiki Business Park expansion. However, since the publication of the DEA, new information regarding the Kaloko Properties development and the Kaloko Town Center in intended Unit 12 was obtained. The area planned for the Kaloko Town Center is currently in the Conservation District, so it is not considered in this section but is discussed in the State and County Development Approvals section below.

Based on the type of planned development associated with these projects, this analysis assumes that there is a low probability that they will be redistricted to the Conservation District by State agencies or as a result of a lawsuit. However, as noted above, the State may enter into agreements with landowners to protect portions of the habitat while retaining their existing State District designation. The rationale for these assumptions for each of the projects is given below:

##### State VOLA Master Planned Community

The State has already invested \$30 million in the VOLA project. This project will contain approximately 1,020 affordable housing units within the intended Unit 13. Since the LUC must consider factors such as the “commitment of State funds and resources;” the “provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups” (HRS 205-17) when making redistricting decisions, this analysis estimates the probability that the VOLA project will be redistricted to the Conservation District to be low.

As mentioned above, the developer of the VOLA project may enter into agreements with the State to protect portions of the intended designation in order to reduce the probability of redistricting to zero. This could cause a reduction in the amount of development planned in the intended designation. As mentioned in the DEA, approximately \$30 million in previous expenditures and \$4.8 million in social benefit of affordable housing are associated with the portion of the project in the proposed/intended designation. In order to illustrate the impacts, if 10 percent of the development is lost due to these agreements, the total economic impact would be \$3.5 million.

#### Keahuolu Project

The planned development in the portions of the Keahuolu Project that are included in critical habitat includes a regional shopping center, several retail commercial areas, a financial plaza, a professional plaza, several office areas, a business hotel, a civic and cultural center, open space, and several interior roads. The development within critical habitat is expected to generate 11,230 person-years in construction employment and 6,670 permanent jobs. The urban development is also consistent with decades of State and county planning efforts and infrastructure investment (John M. Knox & Associates, Inc. 2002). Since the LUC must consider factors such as the “provision for employment opportunities and economic development” and “commitment of State funds and resources”(HRS 205-17) when making redistricting decisions, this analysis estimates the probability that the Keahuolu project will be redistricted to the Conservation District to be low.

As mentioned above, the landowners may enter into agreements with the State to protect portions of the intended designation in order to reduce the probability of redistricting to zero. This could cause a reduction in the amount of development planned in the intended designation. As mentioned in the DEA, approximately \$9 million to \$11 million in previous expenditures and \$100 million in future profits are associated with the portion of the project in the proposed/intended designation. In order to illustrate the impacts, if 10 percent of the development is lost due to these agreements, the total economic impact would be \$10.9 million to \$11.1 million.

#### Kaloko Industrial Park Expansion

The planned development in the portions of the Kaloko Industrial Park expansion that are included in critical habitat include light industrial development and industrial/commercial mixed use development. Approximately 88 percent of the project is in intended Unit 12. The entire project is expected to generate 19,345 direct full-time equivalent jobs during the build-out phase and 2,789 direct full-time equivalent jobs upon full build-out (Wilson Okamoto & Associates, Inc. 2000). Since the LUC must consider factors such as the “provision for employment opportunities and economic development”(HRS 205-17) when making redistricting decisions, this analysis estimates the probability that the Kaloko Industrial Park expansion will be redistricted to the Conservation District to be low.

As mentioned above, the landowners may enter into agreements with the State to protect portions of the intended designation in order to reduce the probability of redistricting to zero. This could cause a reduction in the amount of development planned in the intended designation. As mentioned in the DEA, approximately \$27.7 million in previous expenditures and future profits are associated with the portion of the project in the proposed/intended designation. In order to illustrate the impacts, if 10 percent of the development is lost due to these agreements, the total economic impact would be \$2.8 million.

### Kaloko Properties Master Plan

The planned development in the portions of the Kaloko Properties Master Plan that are included in critical habitat include a golf course and single-family homes. While the amount of employment that could be generated by this project is not known, the construction of the golf course and homes will generate direct and indirect construction and operational employment. Since the LUC must consider factors such as the “provision for employment opportunities and economic development” and “provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups” (HRS 205-17) when making redistricting decisions, this analysis estimates the probability that the Kaloko Properties will be redistricted to the Conservation District to be low.

As mentioned above, the landowners may enter into agreements with the State to protect portions of the intended designation in order to reduce the probability of redistricting to zero. This could cause a reduction in the amount of development planned in the intended designation. As mentioned in the State and County Development Approvals section below, the previous expenditures and future profits for all of the Kaloko Properties in the intended designation ranges from \$22.8 million to \$39.8 million. Approximately half of these properties in the Agricultural and Urban District. As such, this analysis assumes that approximately half of these previous expenditures and future profits are associated with properties that could be redistricted to the Conservation District, or \$11.4 million to \$19.9 million. In order to illustrate the impacts of conditions to avoid redistricting to the Conservation District, if 10 percent of the \$11.4 million to \$19.9 million in previous expenditures and future profits associated with this project is lost due to these agreements, the total economic impact would range from \$1.1 million to \$2.0 million.

In summary, there is a low probability, absent successful litigation, the projects above will be redistricted to the Conservation District, especially if the State and landowners enter into agreements stipulating certain development restrictions on their land to protect portions of the intended designation.

However, redistricting is reasonably foreseeable for certain other parcels in the intended designation that are not currently planned for development. These parcels are not prime agricultural land; they do not maintain resources relevant to Hawai‘i’s economy; State funds and resources have not been invested in these areas; and they are not currently planned for the provision of employment opportunities, economic development, or housing opportunities. On the other hand, the Service has determined that these parcels are essential to the conservation of the listed plants. Taken together, this information suggests that it is reasonably foreseeable that these parcels may be redistricted to the Conservation District.

If these parcels were to be redistricted to the Conservation District, the value of the land would fall. The total loss in property values for each of the privately owned parcels in the Agricultural District for which it is reasonably foreseeable that redistricting may occur is given below. All of the assessed values mentioned below are derived from the County of Hawai‘i real property tax website.

Intended Unit 3 (Proposed Unit F)

Approximately 548 acres of land owned by Parker Ranch are included in the Agricultural District in this intended unit. The market value of this land is currently assessed at approximately \$3,200 per acre, and comparable land in the Conservation District is assessed at approximately \$1,000 per acre. The total loss in property values if this land were redistricted would be \$1.2 million (548 acres x (\$3,200 per acre - \$1,000 per acre)).

Intended Unit 10 (Proposed Unit Z)

Approximately 739 acres of land owned by Kamehameha Schools are included in the Agricultural District in this intended unit. The market value of this land is currently assessed at approximately \$715 per acre, and comparable land in the Conservation District is assessed at approximately \$150 per acre. The total loss in property values if this land were redistricted would be \$418,000 (739 acres x (\$715 per acre - \$150 per acre)).

Intended Unit 15 (Proposed Unit T)

Approximately 424 acres of land owned by a private landowner are included in the Agricultural District in this intended unit. The market value of this land is currently assessed at approximately \$500 per acre, and comparable land in the Conservation District is assessed at approximately \$275 per acre. The total loss in property values if this land were redistricted would be \$95,000 (424 acres x (\$500 per acre - \$275 per acre)).

Intended Unit 17 (Proposed Unit R)

Approximately six acres of land owned by a private landowner are included in the Agricultural District in this intended unit. The market value of this land is currently assessed at approximately \$8,000 per acre, and comparable land in the Conservation District is assessed at approximately \$1,000 per acre. The total loss in property values if this land were redistricted would be \$42,000 (6 acres x (\$8,000 per acre - \$1,000 per acre)).

Intended Unit 30 (Proposed Unit G)

Approximately 6,083 acres of land owned by Kamehameha Schools are included in the Agricultural District in this intended unit. The market value of this land is currently assessed at approximately \$200 per acre, and comparable land in the Conservation District is assessed at approximately \$6 per acre. The total loss in property values if this land were redistricted would be \$1.2 million (6,083 acres x (\$200 per acre - \$6 per acre)).

Intended Unit 34 (Proposed Unit W)

Approximately 1,604 acres of land owned by Kamehameha Schools are included in the Agricultural District in this intended unit. The market value of this land is currently assessed at approximately \$240 per acre, and comparable land in the Conservation District is assessed at approximately \$4 per acre. The total loss in property values if this land were redistricted would be \$379,000 (1,604 acres x (\$240 per acre - \$4 per acre)).



The remaining land in the Agricultural District in the intended designation features cinder cones (pu'us), gulches, or established endangered plant preserves. Economic activities are already constrained on this land because of cultural values, steep slopes, existing protections, and existing management. As such, there would be little or no loss in land value if these areas were redistricted to the Conservation District.

The probability that any one of the parcels mentioned above could be redistricted to the Conservation District as a result of the plants intended designation depends on the quality of the habitat, the landowners' opposition to redistricting, and other potential uses for the land. However, as described above, it is reasonably foreseeable that one or all of these parcels may be redistricted within the 10-year timeframe of this analysis. As a worst-case scenario, if all of the parcels were to be redistricted, the total economic impact would be approximately \$3.3 million.

#### **4.a.(5) Cost of Reduction in Agricultural Use of the Land**

As noted in the DEA, if land were redistricted to Conservation, agricultural activities could continue depending upon which subzone is assigned; i.e., typical agricultural activities are not allowed in the Protective Subzone, but are allowed in other subzones with permission of the State Board of Land and Natural Resources (BLNR). It is possible that areas that have previously been used for ranching will not be placed in the Protective Subzone, and grazing can continue with BLNR approval. If lands in critical habitat were redistricted to a subzone other than the Protective Subzone, a rancher or landowner would need to get a Conservation District Use Authorization (CDUA) permit to obtain BLNR approval to allow grazing in the Conservation District. The cost of obtaining a CDUA can be between \$25,000 and \$100,000 (based on information from planning consultants, 2002). It is assumed that any landowner that allows grazing for ranching or weed control purposes on their land will obtain an CDUA permit in order to minimize fire potential or to avoid the costs associated with possible State mandated protections of the newly redistricted parcel (e.g., fencing to exclude cattle). There are three landowners who allow grazing in the intended designation. Based on this information, the total cost to agricultural activities if land in the Agricultural District was redistricted to the Conservation District would be \$75,000 to \$300,000 (3 x \$25,000; 3 x \$100,000).

However, it is possible that redistricting due to critical habitat could result certain parcels of the land being placed in the Protective Subzone. In particular, some of the areas subject to redistricting are adjacent to land already in the Protective Subzone, so it is possible that the State would want to extend that area. This could result in the cessation of existing ranching activities and the loss of the associated economic activity. Of the parcels mentioned above, approximately 9,400 acres at most are used for grazing. If all of this land was redistricted to the Protective Subzone, the loss in revenues is estimated at about \$235,000 per year (based on an estimated carrying capacity of 10 acres per animal unit, \$250 per animal unit per year, and 9,400 acres of grazing land (9,400 acres / 10 acres per animal \* \$250 per animal)). Companies that supply goods and services to ranches and the employees of these ranches in turn purchase goods and services from other companies, thereby generating even more sales, and so on. When both direct and indirect sales and employment are considered, the total statewide loss amounts to about \$480,000 per year, or \$4.8 million over 10 years (based economic multipliers from the Hawai'i Input-Output Model). This economic activity also supports roughly 14 jobs.

#### **4.a.(6) Cost of Contesting Redistricting**

The DEA estimated that if redistricting of Agricultural, Rural and Urban land to the Conservation District were proposed, then affected landowners could spend more than \$50,000 each contesting the redistricting. Since the proposed designation included approximately 39 private landowners in the Agricultural or Urban District, the DEA estimated that total costs would be almost \$2 million (39 x \$50,000).

As discussed previously, the Service indicates that, for biological reasons, it intends to modify the critical habitat designation. As a result of these intended modifications, fewer landowners would be impacted by the possibility of redistricting: approximately three landowners with planned developments and four landowners with no planned development in the intended designation. Thus, the total costs associated with contesting redistricting for the intended designation could reach \$350,000 (7 x \$50,000).

As discussed in greater detail above, while it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the probability that certain parcels that are economically valuable to the community will be redistricted, especially if the State enters into agreements with landowners stipulating certain development restrictions to protect portions of the intended designation. However, the mere filing of a petition would trigger these costs of contesting redistricting and would not be dependent upon a successful redistricting. However, it is not possible to accurately predict the probability of these costs as it depends upon future actions of the State under conditions for which there is no history on which to base a prediction. Specifically, it is not possible to predict whether the State would seek redistricting of all, part, or none of the land designated as critical habitat. Thus, the \$350,000 estimate above is a worst-case scenario estimate, for which the probability of occurrence is undetermined.

#### **4.a.(7) Summary of Potential Impacts of Redistricting**

As mentioned above, all of the Agricultural and Urban land in the intended designation could be proposed for redistricting. For the land that is planned for development, the landowners may face economic costs associated with: (1) agreements with the State stipulating development restrictions while retaining current District status; and (2) contesting redistricting. However, actual redistricting for these parcels is not likely to occur. For land that is not planned for development, it is reasonably foreseeable that the landowners could: (1) lose property values associated with redistricting; and (2) face costs associated with agricultural activities and contesting redistricting. The costs associated with this scenario are presented below.

- Agreements Stipulating Development Restrictions: \$18.3 million to \$19.4 million
- Loss in Property Values: \$3.3 million
- Cost to Agricultural Activities: \$300,000 to \$4.8 million
- Cost to Contest Redistricting: up to \$350,000

As such, the economic costs of the loss in property values and other costs could reach \$22.3 million \$27.9 million.

#### **4.b. Conservation Management**

Chapter VI, Section 4.d. of the DEA discussed possible costs associated with managing all of the land in critical habitat for the benefit of the listed plants. The DEA concluded that such costs could occur as a result of court-ordered conservation management, although the probability of such a court order was undetermined.

Although the costs of conservation management were presented in the DEA for the purposes of illustration, this analysis concludes that these costs are not reasonably foreseeable. The concern expressed by some is that the prohibition on *taking* endangered and threatened species could be triggered by designation of critical habitat if courts apply the principles of *Palila v. Hawai'i Dept. of Land and Natural Resources*, 471 F. Supp. 985 (D Haw. 1979) *aff'd* 639 F.2d 495 (9th Cir. 1981) and *Palila v. Hawai'i Dept. of Land and Natural Resources*, 649 F. Supp. 1070 (D. Haw. 1986), *aff'd* 852 F.2d 1106 (9th Cir. 1988). However, while critical habitat may provide information to help a landowner identify where *take* through habitat modification may occur, the Federal and State *take* prohibitions are triggered by the listing of a species and would apply whether or not critical habitat has been designation. *Palila* did not announce a rule that degradation of designated critical habitat constituted *take*. While the circumstances considered by these cases happened to occur in the palila's critical habitat, the legal issues involved interpretation of "harm" in the Federal ESA's definition of *take*. *Take* of a listed wildlife species may occur inside or outside of critical habitat if it causes death or injury to the species. The link between critical habitat designation and the *take* prohibition is even more attenuated when applied to listed plants because the applicable prohibitions are not the same as those applicable to listed wildlife and do not include the prohibition on "harm" that was at issue in *Palila*. Likewise, there is no indication in Hawai'i State law that critical habitat would trigger the *take* prohibition; in fact, there is no mention of critical habitat in the State endangered species law. *See* HRS 195D-1 *et seq.* Further, there is no private right of action to enforce the State's *take* prohibitions. Finally, there is no other Federal, State, or county law or regulation that mandates conservation management for critical habitat. As such, this analysis concludes that mandated conservation management based on critical habitat designation is not likely.

#### **4.c. State and County Development Approvals**

Chapter VI, Section 4.e. of the DEA indicated that a major concern among private landowners, developers, and other interested parties is that critical habitat designations will significantly affect State and county development approvals, even when there is no *Federal involvement*. The primary focus of the concern lies with potentially controversial projects that: (1) are in portions of the critical habitat that were not previously recognized as being environmentally sensitive because they contain no listed species, and (2) require major funding or discretionary approvals by the State or county. Discretionary approvals could include redistricting by the State LUC, approvals by BLNR for projects in the State's Conservation District, General Plan or Community Plan amendments by county councils, use permits from the county councils for activities within the Special Management Areas, etc.

There are several development projects in the intended designation that will require discretionary approvals by the State and/or county. It is not known how State and county officials will view critical habitat when considering development approvals, but there is a concern that critical habitat will result in increased difficulty in securing development approvals for new projects.

The DEA discussed the costs associated with State and county development approvals in general terms for the proposed designation. Based on the intended designation and on information obtained since the publication of the DEA, the Addendum looks at the specific impacts to each planned project requiring development approvals. These development approvals, as well as the economic costs associated with a loss or delay of these approvals, are discussed below.

Some of the costs below may overlap, at least in part, with the costs landowners may face by entering into agreements with the State in order to reduce the probability of redistricting to zero, as discussed in section 4.a. above.

#### **4.c.(1) State VOLA Master Planned Community**

The VOLA project is already in the State Urban District and is included in the county General Plan as urban expansion. The State HCDCH is the primary developer of the housing phases of the project and the county is the primary developer of the associated golf course. Two large areas in the project boundaries contain listed plant individuals. The HCDCH has been working with the Service to develop measures to protect these plant individuals. Prior to the proposed designation of critical habitat, HCDCH had agreed not to develop the areas that contain listed plants. The proposed and intended designation contains these two areas, plus areas that are currently *unoccupied* by the listed plant species and planned for development of housing, roads, infrastructure, a golf course, and other project elements.

The State and county have expressed concern that the designation of critical habitat outside of the *occupied* areas will impact the development of this project. One of the concerns is that development in critical habitat will be politically infeasible. The VOLA project has already been affected by problems such as ceded lands litigation and defaulting developers, so critical habitat could be the final factor that causes the abandonment of the project. If this occurred, the economic costs would be similar to those mentioned in Chapter VI, Section 4.c.(7) in the DEA. These costs include roughly \$30 million in previous expenditures as well as a loss of roughly \$4.8 million as a proxy of the social value for affordable housing. While this loss could be offset if additional affordable housing units are built elsewhere, the State indicates that if it is unable to continue with the VOLA development, a new affordable housing development of a comparable size is not likely to be completed in the next 10 years (HCDCH, 2002).

A golf course is planned in the portion of the VOLA development in the intended designation. The primary benefits of this golf course are to add to the selling values of adjacent homes, improve drainage, and to dispose of treated wastewater. If the housing elements of the project are not built, the golf course will no longer be needed at this site. Any loss of recreational value associated with a loss of the golf course site are expected to be minimal because the project could be relocated on State land north of intended Unit 13 that is in the Urban District but does not currently have specific plans for development.

#### **4.c.(2) Keahuolu Project**

Queen Lili'uokalani Trust (QLT), the owner and master planner of the Keahuolu Project, indicates that several major discretionary approvals are still pending. Phase I of the project is in the Urban District, but QLT is currently in the process of satisfying the conditions for obtaining a zoning change from unplanned to CG-10 from the county for the portions of Phase I in intended Unit

13. Phase II of the project is in the Agricultural District and will also require a county zoning change.

This analysis estimates that the designation of critical habitat will not cause the State or county to deny development approvals in the Keahuolu Project. This assessment is based on the fact that there is general community support for the project and that the area is currently *unoccupied* by the listed plants. However, this analysis assumes that it is reasonably foreseeable that the designation of critical habitat could cause a delay in development approvals as additional environmental studies may be conducted, and State and county officials investigate the implications of critical habitat. A development approval delay could cause further delays in the project if potential developers back out of the project. QLT has indicated that it already has trouble attracting developers due to its policy to only offer lease-hold interest in its land, rather than selling the land fee-simple. This analysis assumes the combination of these effects could result in a three to five year delay in the planning and permitting phase of the project.

A three to five year delay will cause a delay in the eventual collection of lease-rent revenue. As discussed in Chapter VI, Section 4.c.(7) of the DEA, the discounted value of the net future stream of lease-rent revenue at the end of the 10-year time-frame of the DEA (i.e., the year 2012), will be roughly \$100 million, based on a series of assumptions presented in the DEA. During the public comment period, QLT commented that a seven percent discount rate would be more appropriate than the 10 percent discount rate used in the DEA. With this adjustment, the net future stream of lease-rent revenue is \$148 million.

A three to five year delay in the planning and permitting phase of the project would cause the realization of the economic benefits of the project to be delayed until 2015 or 2017. Using a seven percent discount rate, the present value of the \$148 million in 2012 is \$75.2 million ( $\$148 \text{ million} / (1 + 7 \text{ percent})^{10} \text{ years}$ ). The present value of the \$148 million realized in 2015 is \$61.4 million ( $\$148 \text{ million} / (1 + 7 \text{ percent})^{13} \text{ years}$ ). The present value of the \$148 million realized in 2017 is \$53.6 million ( $\$148 \text{ million} / (1 + 7 \text{ percent})^{15} \text{ years}$ ). Thus, the present value of the loss associated with a delay due to critical habitat is \$13.8 million to \$21.6 million ( $\$75.2 \text{ million} - \$61.4 \text{ million}$ ;  $\$75.2 \text{ million} - \$53.6 \text{ million}$ ).

QLT also indicated that their development approvals from the LUC for Phase III of the Keahuolu project are contingent on “substantial completion” of Phases I and II. While Phase III is not included in the proposed or intended designation, impacts to the development potential and timing in Phases I and II will indirectly impact the future development of Phase III. QLT indicates that it may have to go back to the LUC for approvals to develop Phase III before substantial completion of Phases I and II, and that the estimated cost of doing so could be a “significant percentage” of the \$1 million it spent between 1988 and 1993 obtaining the original State and county entitlements for the entire Keahuolu project. Since QLT will only have to go to one agency and modify an existing entitlement, this analysis assumes that QLT may have to expend 25 percent of the original costs in order to obtain the necessary modifications to the LUC entitlements, or roughly \$250,000.

As mentioned in the DEA, QLT uses revenue from its land holdings to provide care for orphans and destitute children, with a preference given to children of Native Hawaiian ancestry. As such, a reduction in revenue could have significant social and cultural impacts on the community.

#### **4.c.(3) Kaloko Industrial Park Expansion**

All of the major discretionary approvals for this project have been obtained. Thus, the designation of critical habitat is expected to have little impact on development approvals for the project.

#### **4.c.(4) Kaloko Properties and Kaloko Town Center (Kaloko Developments)**

The Kaloko Properties and Kaloko Town Center (Kaloko Developments) will require major discretionary approvals from the State and county. Approximately 68 acres of these projects in intended Unit 12 are in the Agricultural District, and 163 acres are in the Conservation District. These areas will need to be redistricted to the Urban District by the LUC before development can proceed. After redistricting, the developers will need a zoning change from the county.

The Kaloko Developments may not occur in the next ten years for a variety of reasons unrelated to the intended designation. The landowners indicate that they have already completed at EIS in 1996 for the Kaloko Town Center, but the development is not currently underway due to unfavorable economic conditions. If these economic conditions persist, this analysis assumes that the landowners may not begin development until the conditions become more favorable. Alternatively, the LUC may decide not to redistrict the land to the Urban District from the Conservation and Agricultural District for reasons unrelated to the intended designation. Similarly, the county may not change the zoning for reasons unrelated to the intended designation. Finally, even if the economic conditions are favorable and the State and county development approvals are obtained, the portions of the Kaloko Development in the intended designation may be developed after the 10-year time frame of this analysis. In each of these cases, the indirect costs attributable to the intended designation would be small.

However, there is a reasonably foreseeable chance that the Kaloko Developments would have proceeded in the absence of the intended designation in the next 10 years, and that the intended designation will affect this development. In the worst-case scenario, the State or county might decide not to grant the discretionary approvals as a result of the intended designation. Under this worst-case scenario, the landowner may not be able to continue with the current plans for development. The economic impact of this scenario would be a loss in past investment in the developments and a loss of future expected profits.

The past investments associated with the Kaloko Developments are calculated as follows. The landowner indicated that it and its predecessor owners have already expended over \$20 million for infrastructure improvements, engineering, and entitlements for their lands in expectation of the future development of the 1,150-acre Kaloko Properties. The intended designation of critical habitat covers approximately 335 acres, or 29 percent of the total master planned area. As such, it is assumed that approximately \$5.8 million of the previous expenditures (29% x \$20 million) are associated with the land in critical habitat.

The landowner of the Kaloko Developments indicated that approximately 91 acres of intended Unit 12 are planned for single-family homes, 106 acres are planned for multi-family homes, 103 acres are planned for a golf course, 10 acres are planned for a park, four acres are planned for Office/Commercial/Retail, seven acres are planned for Commercial/Retail, and 17 acre are planned for a school. The landowner estimates that the total economic impact if this development does not occur will be approximately \$390 million in revenues, based on the allowable density; average

regional selling values of single-family and multi-family homes; the development cost of office, commercial and retail buildings; and the development costs per acre of golf courses and parks.

The methodology used to derive the estimated economic impact of \$390 million is not entirely consistent with the methodology presented in the DEA. The landowner's estimate is based on selling values and development cost, not profits. As mentioned in the DEA, only the previous expenditures (sunk costs) and future potential profits to the landowner are considered an economic impact of critical habitat designation. Additional construction and development costs are not considered because it is assumed that if development cannot occur in critical habitat, it will relocate elsewhere in the region. This assumption is supported by the fact that a large area surrounding critical habitat is planned for urban expansion in the County of Hawai'i's General Plan, and because there are other entitled projects awaiting development (such as a 2,640 acre project on State lands that is just north of intended Unit 13 and planned for residential, commercial, and light industrial development; parks; a golf course; and other uses).

The future potential profits associated with the Kaloko Developments will be a portion of the selling values and development costs of the development planned in critical habitat. Developers typically expect a profit margin of 10 to 20 percent of selling values and development costs. Based on the selling values and development costs estimated by the landowners for the part of the development planned in critical habitat (\$390 million), the loss in profit would range from \$39 million to \$78 million.

The loss in profit would occur over the life of the project. While the landowner anticipates commencing the project within the next 10 years, most of the project development is likely to occur outside the time frame of this analysis. Thus, a present value of the future stream of profits is presented. All elements of the project except the golf course will require a change in the State land use designation and county permitting, so it is assumed that construction will not begin for at least three years. It is also assumed that the profit generating portions of the project will not be completed for another two years. Finally, it is assumed that the entire project will be completely built out within 20 years. These assumptions are based on the development approvals and phasing described in the 1996 Kaloko Town Center EIS. Based on these assumptions and using a seven percent discount rate, the present value of the future stream of profits ranges from \$17 million to \$34 million.

Again, the specific likelihood of this occurrence is unknown, but it is possible that critical habitat could make the State and county less likely to grant development approvals for the Kaloko Developments. However, as mentioned above, it is also possible that the development in the intended designation will not occur in the next 10 years for reasons unrelated to critical habitat. In this case, the economic costs attributable to critical habitat would be small.

#### **4.c.(5) Summary**

There are several development projects in the intended designation that will require discretionary approvals from the State and/or county. It is not known how State and county officials will view critical habitat when considering development approvals, but there is a concern that critical habitat could result in: (1) increased political pressure against development; (2) conditions on development; or (3) increased difficulty in securing development approvals for new projects. The economic costs associated with additional conditions placed on land to limit development are discussed in the redistricting section above. The present value of the potential costs associated with increased political pressure and with denied or delayed approvals, by major project, include:

- State VOLA Master Planned Community: Roughly \$30 million in previous expenditures and \$4.8 million as a proxy of the social value for affordable housing
- Keahuolu Project: Approximately \$13.8 million to \$21.6 million in lost future lease rent revenues due to a delay in approvals, roughly \$250,000 for a modification in Phase III approvals, plus un-quantifiable social and cultural costs
- Kaloko Industrial Park Expansion: No major discretionary approvals pending
- Kaloko Properties and Kaloko Town Center: Impacts ranging from small to approximately \$5.8 million in the previous expenditures and \$17 million to \$34 million in the present value of the future stream of profits

The \$48.9 million to \$96.5 million in potential costs represent losses to specific entities, plus potential social and cultural costs to the community. The probability that these costs will occur is undetermined because it depends on future State and county agency actions. However, the islandwide costs are likely to be small because, as mentioned above and in the DEA, development displaced from critical habitat could occur elsewhere on the Big Island.

#### **4.d. State and County Environmental Review**

Chapter VI, Section 4.e.(2) of the DEA assumed, based on discussions with planning consultants and government officials, critical habitat designations are likely to increase the scope of required environmental analysis. The reason for this is that State and county agencies would require developers to address the impact of projects on critical habitat and related public concerns.

As mentioned in the DEA, subject to certain exemptions, a State Environmental Assessment (EA) or Environmental Impact Statement (EIS) is required for projects that: (1) use State or county lands or funds; (2) are in the Conservation District; (3) are in the Shoreline Setback Area (usually 40 feet inland from the certified shoreline); (4) require an amendment to a county plan that would designate land to some category other than Agriculture, Conservation or preservation; or (5) involve reclassification of State Conservation District lands. If a project “substantially affects a rare, threatened, or endangered species, or its habitat,” then a State EIS might be required instead of the simpler and less expensive EA. It is reasonable to assume that, although State law does not include the concept of critical habitat, the term “habitat” (which, in Hawai‘i, includes areas that support listed threatened and endangered species) may eventually be interpreted by decision-makers to include “critical habitat” (which may include areas that could support listed species but presently do not).



If critical habitat designation were to result in a requirement for a State EIS instead of an EA then, depending upon the complexity of the project, this could cost \$25,000 to \$75,000 more than an EA (based on estimates from Hawai'i planning firms). In addition, biological surveys could be required.

Several projects and activities taking place within the intended designation that use State or county funds have already completed EISs (Saddle Road Project), or are exempt from requiring an EA (fire pre-suppression). However, six other projects and activities in the intended designation may require an EA because they will use State or county funds or will take place in the Conservation District. These projects include three road projects, installation of a water tank and construction of a trail at Pu'u Wa'awa'a, and drug enforcement raids. If all six projects subsequently require EISs due to critical habitat, the additional cost to prepare them will be between \$150,000 and \$450,000 (6 x \$25,000 and 6 x \$75,000). Most of these projects will require a survey as part of a section 7 consultation or other environmental review, so survey costs are not presented here to avoid double-counting.

The landowners of the site planned for the Kaloko Town Center indicate they have already completed at EIS in 1996, but the development is not currently underway due to unfavorable economic conditions. As mentioned in the previous section, this development may not occur for reasons unrelated to the intended designation. However, the landowners indicate that if development were to continue at the site, the EIS would have to be updated and supplemented due to the designation of critical habitat. If this cost roughly the same as the costs mentioned above, the total cost of State and county environmental review will range from \$175,000 to \$525,000 (\$150,000 + \$25,000; \$450,000 + \$75,000).

This estimate may overstate the costs attributable to critical habitat because some of the projects may require an EIS because they could affect listed plant individuals. However, since detailed surveys have not yet been completed for some these projects, it is not known how many of the projects may affect listed plant individuals. The Kaloko Town Center will not directly impact listed plant individuals.

#### **4.e. Reduced Property Values**

Chapter VI, Section 4.f. of the DEA indicated that an issue often raised by private landowners, and closely related to the above discussions, is that their property may lose value because of critical habitat designation. They are concerned that the designation will make their land less desirable by restricting its potential use or its development potential, or by increasing landowners' land-management or development costs.

The market value of a property reflects the future time-stream of economic and other benefits (e.g., profits) anticipated by potential buyers and sellers of land. Thus, factors which affect the future time-stream of benefits will affect the property values. For example, even partial approval of development can increase anticipated benefits and the timing of these benefits, thereby increasing property value. On the other hand, restrictions on land use, higher land-management costs, limits on development potential, higher development costs, and delayed development will adversely affect the anticipated stream of benefits, thereby reducing the property value.

Reduced property values may be based on facts and an accurate assessment of the implications of critical habitat. But even perceptions of the economic impact of critical habitat designation can result in a loss of property value if landowners or buyers believe that the designation will cause significant changes in the stream of benefits. Such a loss in property value will be experienced for as long as the perceptions persist. Similarly, uncertainty about the impact of a critical habitat designation can cause a temporary reduction in land value that will continue until clear and correct information is distributed.

The concern of landowners about reduced property values primarily involves land that is: (1) privately owned; (2) in the State's Urban, Rural or Agricultural District; and (3) suitable for eventual development or commercial use based on access, gentle slopes, proximity to infrastructure and services, etc. It also includes some privately owned land in the Conservation District that has high value because of a high probability of being redistricted to the Agricultural or Urban Districts.

However, only a limited number of such properties are in the intended designation. As indicated previously, much of the land is: (1) owned by government; (2) in the Conservation District; and (3) not suitable for development because it is in areas that have poor access and difficult terrain (e.g., lava flows).

All of the land in the Agricultural and Urban Districts could be subject to costs associated with proposed or actual redistricting. These costs may include the costs of conditions placed on land to limit development to avoid redistricting for some parcels, loss in property values associated with actual redistricting for some parcels, costs of contesting redistricting, and costs associated with agricultural activities for some parcels. As mentioned in the redistricting section above, these costs range from \$22.3 million to \$27.9 million. Concerns about these costs could lead to a loss in property values of an undetermined percentage of this range.

Some land in the Agricultural and Urban Districts is planned for development. As discussed in the redistricting section above, the probability is low that this land planned for development will be redistricted to the Conservation District, especially if the landowners agree to certain restrictions on land to limit development. However, the intended designation could affect State and county development approvals for these properties. This could impact the future profits associated with the planned developments. As mentioned in the State and County Development Approvals section above, the discounted present value of economic impacts to particular entities associated with the loss or delay of State and county development approvals could reach \$48.9 million to \$96.5 million. Since the property value of undeveloped land reflects the current level of investment in the land and the discounted value of future profits, this range represents the possible loss in property values.

Thus, the actual loss in land value over 10 years due to critical habitat would overlap with an undetermined fraction of the \$71.2 million to \$124.4 million mentioned in the redistricting and State and county development approvals sections above (\$22.3 million + \$48.9 million; \$27.9 million + \$96.5 million).

#### **4.f. Military Readiness**

Chapter VI, Section 4.h. of the DEA discussed the potential indirect impacts of critical habitat designation on military readiness. These impacts stemmed from the fact that proposed Unit AA covered almost 93 percent of the existing area available for maneuvers and special uses at Pohakuloa Training Area (PTA). The Army was concerned that critical habitat would increase the probability of a successful third-party lawsuit to limit or stop training activities in proposed critical habitat. As mentioned in the direct costs section above, the intended designation covers 65 percent of the area available for maneuvers and special uses at PTA. The Service indicates that, for biological reasons, it intends to remove the areas heavily used for training in the northern corridor of PTA.

The intended reductions in the designation will reduce the potential for indirect impacts on military readiness at PTA. For example, since most of the degraded areas currently used for training are removed from the intended designation, this analysis assumes that the scenario in which the Army may leave Hawai'i mentioned in the DEA is no longer reasonably foreseeable. However, certain facilities and training areas planned to support the Stryker Brigade Combat Team (SBCT) as part of the Army's transformation are included in the intended designation. As mentioned in the DEA, the Army is concerned that a court may determine that planned off-road vehicular use in critical habitat degrades the value of the critical habitat and cannot be conducted at PTA. For example, a third party could sue the Army on the basis that a Federal or State EIS did not fully take into account the impact of transformation on critical habitat. While this lawsuit could be filed in the absence of critical habitat, the designation may add weight to the third-party claims, especially for areas that are not currently occupied by the listed species. Alternatively, as mentioned in the direct costs section above, the Service and the Army may determine that off-road vehicular use, with certain project modifications, does not *adversely modify* critical habitat. However, the Army is concerned that a third party may challenge the Army's and the Service's determination. While the lawsuit may be unsuccessful, the court may issue an injunction to the Army asking it to cease and desist certain training activities until the lawsuit is settled. The Army indicates that even a relatively short delay in the training schedule could have large impact (Army, 2003).

The probability that a lawsuit may be filed and be successful is undetermined, but the costs of the result of such a lawsuit are presented for illustrative purposes. These costs on the Big Island would be expressed in terms of lost Federal military funds in Hawai'i and a loss of the use of a unique and strategic training area.

Due to its size and location, PTA is the only range in Hawai'i where certain activities necessary for transformation (i.e., training the SBCT) can take place. If a lawsuit makes PTA unavailable for these training activities, the Army may choose to transform a division in another state into the SBCT. The Army plans to spend \$693 million in direct construction costs in Hawai'i to support transformation. These Federal funds would be lost to Hawai'i if the Army were not to continue with current transformation plans (Army, 2002).

Apart from impacts on transformation, the Army is concerned that current activities at PTA may also be affected by a third-party lawsuit. PTA is a unique and a valuable training area in Hawai'i for the following reasons:

- It frequently functions as the destination point for air mobility exercises.
- It can accommodate two infantry battalions simultaneously.
- It is the only location in the State that can support combined air/ground live-fire exercises.
- All weapons system munitions can be fired at a maximum range with a broad firing corridor. The ranges on O‘ahu provide only a narrow corridor and no depth for artillery.

If a third-party lawsuit were to compromise the utilization of these unique and valuable attributes of PTA, the Army indicates that it would have to alter its training activities. For example, the Army may elect to transport troops to less constrained training areas in Alaska or the contiguous United States. The average round trip cost of transporting one battalion by air and ship from Hawai‘i to Fort Lewis, Washington is estimated at approximately \$1.1 million (Onyx 2001). These high transportation costs could result in reduced frequency of certain training exercises for troops stationed in Hawai‘i, which may affect their readiness and effectiveness.

#### **4.g. Costs to Investigate Implications of Critical Habitat**

Chapter VI, Section 4.i. of the DEA indicated that landowners may want to learn how the designation may affect (1) the use of their land (either through restrictions or new obligations), and (2) the value of their land. The DEA estimated the costs of investigation at \$273,000 to \$798,000, assuming that all 84 private landowners impacted by the proposed designation would spend approximately 15 to 40 hours investigating.

Public comment noted that the estimate of investigative costs presented in the DEA was too low considering the size of the designation and uncertainties about the exclusion of “unmapped holes.” It is recognized that some landowners may spend a great deal of time investigating, while other landowners may not conduct any investigation. The estimate contained in the DEA is a range that reflects the total cost for all landowners based on an average cost per landowner. Public comment did not provide an alternative estimate of time or cost incurred in order to investigate implications of critical habitat sufficient to require changes to the estimated average cost per landowner. Thus, this Addendum does not revise the number of hours that the DEA estimated the landowner and/or his attorneys or professional staff would spend on investigating the issues.

However, the Addendum does revise the number of affected landowners to 19 because of the intended modifications to the critical habitat indicated by the Service. Thus, an estimate of the costs involved with investigation for the intended designation ranges from roughly \$50,000 to \$181,000. This cost is based on the following assumptions: (1) 19 landowners will investigate the implications of critical habitat; (2) the landowner and/or his attorneys or professional staff will spend about 15 to 40 hours on the investigation at rates of \$150 to \$200 per hour; and (3) Service staff will spend four to ten hours at \$100 to \$150 per hour responding to inquiries from each landowner.

Public comment questioned whether the indirect cost of investigating the implications of critical habitat should be considered a sunk cost of the critical habitat designation process rather than a potential future cost of a final designation. While some landowners may expend time and money to investigate the implications of critical habitat on their land during the designation process, many landowners may not do so until after final designation is complete. Thus, the DEA and this Addendum conservatively treat these costs as attributable to the final designation.

## **5. COSTS TO SMALL ENTITIES**

### **5.a. Regulatory Flexibility Act**

Under the Regulatory Flexibility Act (RFA) (as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.

SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

SBREFA does not explicitly define either "substantial number" or "significant economic impact." Consequently, to assess whether a "substantial number" of small entities is affected by this designation, this analysis considers the relative number of small entities likely to be impacted in the area. Similarly, this analysis considers whether or not entities incur a "significant economic impact." Only small entities that are expected to be directly regulated by the designation are considered in this portion of the analysis. This approach is consistent with several judicial opinions related to the scope of the RFA. (Mid-Tex Electric Co-Op, Inc. v. F.E.R.C. and America Trucking Associations, Inc. v. EPA.)

### **5.b. Entities Potentially Impacted**

The analysis is based on a review of all previously discussed projects, activities, land uses and entities that may be directly regulated by the implementation of section 7 for the listed plants in the intended designation. Based on this review, the following entities will be directly impacted (projects, activities, and land uses are noted in parentheses):

#### **Federal:**

- Service (All projects, activities, land uses)
- National Park Service (NPS) (Hawai'i Volcanoes National Park conservation activities and expansion, funding The Nature Conservancy of Hawai'i (TNCH) and other conservation projects, fire suppression activities)
- FSA (FSA farm loan programs, USDA conservation programs, FSA disaster relief programs)
- NRCS (USDA conservation projects, funding construction of non-potable water systems)
- Federal Highways Administration (FHWA) (Funding construction of new roads and trails)
- MTMC (Funding construction of new roads)
- FCC and/or FAA (Permitting communications facilities)
- Federal Emergency Management Agency (FEMA) (Funding natural disaster recovery)

- U.S. Forest Service (Funding fire management activities)
- DEA (Illegal drug control)
- Army (Military training exercises, fire suppression activities)
- Navy (Military training exercises)
- Marines (Military training exercises)
- Air Force (Military training exercises)
- Other Federal Agencies, not yet identified (funding TNCH and other conservation activities)

**State:**

- DLNR (Game management, trail construction, conservation activities and improvements in State managed areas, non-potable water system improvements, fire management, illegal drug enforcement)
- Hawai'i Army National Guard (Military training exercises)
- Hawai'i Department of Transportation (HDOT) (Constructing new roads)

**County:**

- Hawai'i County DPW (Constructing new roads)

**Non-profit:**

- TNCH (Conservation activities)
- Kamehameha Schools (Constructing new communications facilities)
- K2020 (Extinguishing fire in old county landfill)

**Private:**

- Ranchers (Participating in farm loan programs)
- Verizon (Constructing new communications facilities)
- Hawai'i Electric Company (HELCO) (Constructing new communications facilities)
- Chronicle Publishing Company (Constructing new communications facilities)

**5.c. Small Entities Potentially Impacted**

The RFA/SBREFA considers “small entities” to include small governments, small organizations, and small businesses (5 U.S.C. §601). The following discussion examines each entity potentially impacted from the list above to determine whether it would be considered “small” under the RFA/SBREFA.

### **5.c.(1) Federal Agencies**

For the purposes of the RFA/SBREFA, Federal agencies are not considered small governments. As such, the Service, NPS, FSA, NRCS, FHWA, MTMC, FCC, FAA, FEMA, U.S. Forest Service, DEA, Army, Navy, Marines, Air Force, and other Federal agencies are not considered further in this portion of the economic analysis.

### **5.c.(2) State Agencies**

For the purposes of the RFA/SBREFA, State governments are not considered small government jurisdictions. As such, the DLNR, Hawai'i Army National Guard, and HDOT are not considered further in this portion of the economic analysis.

### **5.c.(3) County Agencies**

The RFA/SBREFA defines "small governmental jurisdiction" as the government of a city, county, town, school district, or special district with a population of less than 50,000. Hawai'i County has a population greater than 50,000 (see Chapter II). As such, county agencies such as the Hawai'i County DPW are not considered further in this portion of the economic analysis.

### **5.c.(4) Non-Profit**

The RFA/SBREFA defines "small organization" as any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. TNCH is a large organization that is dominant in the conservation and land management field on the Big Island. According to the RFA/SBREFA definitions, TNCH is not likely to be considered a small organization.

Kamehameha Schools is the largest charitable trust in Hawai'i, as well as the State's largest private landowner; it also has a substantial investment in securities and owns real estate in other states. In 2001, Kamehameha Schools had over \$1 billion in revenues, gains, and other support (Kamehameha Schools, 2001). Thus, it is not likely to be considered a small organization.

K2020 is a small non-profit community action committee with the goal of improving the Kealakehe Ahupua'a or land division. K2020 indicates that it is currently quite small, but it has plans for large projects, so it may be bigger in the future. K2020 is the only organization with plans to revitalize the natural resources of the Kealakehe Ahupua'a, and it is the only community action committee on the Big Island (K2020, 2003). Since K2020 is dominant in the community action committee field on the Big Island, it is not likely to be considered a small organization.

### **5.c.(5) Private**

Four ranchers may be involved in a consultation regarding the FSA farm loan program. FSA farm loans are only available to ranchers who are temporarily unable to obtain private, commercial credit. This will tend to screen out the larger ranchers in critical habitat. The SBA defines a rancher as small if its annual sales are less than \$750,000. Based on annual sales figures for ranchers on the Big Island (see section 5.d.(2) below), it is assumed that the four ranchers are small businesses.

Verizon is a subsidiary of Verizon Communications Inc., an international communications company. The SBA defines a communications company as small if it has fewer than 1,500 employees. Verizon Communications Inc. currently has 260,000 employees, so it is not a small business (Verizon, 2002).

HELCO is a subsidiary of Hawaiian Electric Industries, Inc. (HEI). HEI is the largest Hawai'i-based company, providing electric utility services to 95 percent of Hawai'i's residents. HEI also owns the State's third largest bank. The SBA defines an electric utility as small if, including its affiliates, its total electric output for the preceding fiscal year did not exceed four million megawatt hours. HEI's affiliates generated 9.4 million megawatt hours in 2001, so it is not a small business (HEI, 2002).

Chronicle Publishing Company is a subsidiary of the Chronicle Publishing Company in San Francisco, California. The parent company is primarily involved in publishing newspapers and books, and television broadcasting. The SBA defines a newspaper or book publisher as small if it has fewer than 500 employees and it defines a television broadcasting company as small if its annual sales are less than \$12 million. Based on the number of employees and the annual sales, the Chronicle Publishing Company is not a small business (Dun & Bradstreet, 2002).

#### **5.d. Potential Impacts on Small Entities**

Based on the discussion above, the only small or potentially small entities that may be impacted by section 7 implementation for the plants in the intended designation are four ranchers.

##### **5.d.(1) Ranching**

Four ranchers may be involved in section 7 consultations regarding FSA farm loans. Based on the estimates provided in Table VI-1 and Table VI-2 in the DEA, participation in the consultations will cost between \$1,400 and \$4,200 and conducting the biological survey will cost \$4,500, so the total economic impact will be \$5,900 to \$8,700 per rancher. Project modifications associated with these consultations are expected to be minor. Based on the average length of consultations, it is assumed the ranchers will face these costs in one year.

The 2000 average annual sales for ranchers on the Big Island is \$30,100 per rancher (DBEDT, 2002). Since \$8,700 is 29 percent of the average annual sales for a rancher, it is assumed that critical habitat will have a significant economic impact on the ranchers. This assumption is based on the fact that ranching in Hawai'i is typically a marginally profitable business. NRCS staff on the Big Island indicate that they are currently unaware of any rancher that makes a profit of 29 percent of revenues, and that most ranchers do not make any profits (NRCS, 2003). According to examples provided in the 2002 SBA publication, *The Regulatory Flexibility Act, An Implementation Guide for Federal Agencies*, an economic impact that is a greater percentage of revenues than the businesses profit percentage would generally be viewed as a significant economic impact. Since most ranchers do not make a profit on the Big Island, and none make profits greater than 29 percent of revenues, it is assumed that the four ranchers will face a significant economic impact as a result of the plants listing and critical habitat designation.



Alternatively, the ranchers could choose not to participate in the FSA farm loan programs. This would avoid *Federal involvement* in their operations and a section 7 consultation would not be necessary. However, the *SBA Implementation Guide* identifies a scenario where the implementation of a rule might reduce the ability of the firm to make future capital investment as a potentially significant impact, especially if the lack of investment makes the business less competitive compared to other business. Since ranching is a marginally profitable industry on the Big Island, Federal loan programs could be essential for capital improvements or to cover operating expenses. The loss of these loans could also be considered a significant economic impact.

However, there are 470 ranchers on the Big Island. Based on the annual sales figures mentioned in the preceding paragraph, most of these ranchers are small businesses (i.e., less than \$750,000 in annual sales). Four ranchers represent less than one percent of the number of ranchers on the Big Island. While the *SBA Implementation Guide* does not explicitly define what constitutes a “substantial” number of small entities in the ranching industry, it give examples of a substantial number being “more than just a few.” It also mentions that five small firms out of an industry of 1,000 small firms is probably not a substantial number, but five small firms out of an industry of 20 small firms would be a substantial number. The four ranchers that are likely to face a significant economic impact for one year out of almost 470 small ranchers on the Big Island appear to be consistent with the SBA examples of what is less than a “substantial” number. Thus, this analysis concludes that the four ranchers does not equal a substantial number of the small businesses in the ranching industry.

#### **5.d.(2) Summary**

Based on the analysis above, implementation of the Act’s section 7 provisions for the plants in the intended designation may have a significant economic impact on four ranchers. However, the SBA guidance suggests that these ranchers do not represent a substantial number of the small entities in their industry. Therefore, the intended designation will not have a significant economic impact on a substantial number of small entities.

### **6. SECTION 7-RELATED BENEFITS**

#### **6.a. Regional Economic Activity Generated by Conservation Management**

Chapter VI, Section 6 of the DEA discussed the potential direct and indirect benefits that could result from critical habitat. Specifically, Chapter VI, Section 6.b.(1) discussed the economic activity generated by conservation management. Subsequently, Section 4.a. of this Addendum states that although the costs of conservation management were presented in the DEA for the purposes of illustration, this analysis assumes that these costs are not reasonably foreseeable. As such, this analysis concludes that mandated conservation management based on critical habitat designation is not likely.

#### **6.b. Regional Economic Activity Generated by Project Modifications**

Chapter VI, Section 6.b.(1) discussed the economic activity generated by project modifications. The expenditures associated with these project modifications may increase economic activity in Hawai‘i. Certain project modifications are estimated to be financed through private, county or State funds. These would not result in a significant change in economic activity for the

economy as a whole because any funds spent in Hawai'i would be at the expense of expenditures elsewhere. However, the majority of the project modifications costs will be federally funded. Approximately \$45.6 million to \$60.0 million in project modification costs associated with the intended designation for the Army project, road projects, and K2020 projects may be federally funded over 10 years.

The range of \$45.6 million to \$60.0 million in project modification costs can be split into general conservation management expenditures and road construction expenditures. Based on the discussion of these project modifications in the direct costs section in the Addendum and in the DEA, the general conservation management expenditures will range from \$42.3 million to \$55.9 million over 10 years. As mentioned in the DEA, each additional \$1 million spent in Hawai'i on conservation management activities would generate approximately \$1.8 million in direct and indirect sales in Hawai'i, and would support approximately 22 direct and indirect jobs. As such, the project modification expenditures would generate roughly \$76.1 million to \$100.6 million over 10 years in direct and indirect sales in Hawai'i, and would support about 931 to 1,230 direct and indirect jobs.

The road construction project modifications expenditures will range from \$3.3 million to \$4.2 million. Based on the multipliers in the Hawai'i Input-Output model, each additional \$1 million spent in Hawai'i on road construction activities would generate approximately \$2.1 million in direct and indirect sales in Hawai'i, and would support approximately 15 direct and indirect jobs. As such, the project modification expenditures would generate roughly \$6.9 million to \$8.8 million over 10 years in direct and indirect sales in Hawai'i, and would support about 50 to 63 direct and indirect jobs.

Combined, the conservation management and road construction project modification expenditures would generate roughly \$83 million to \$109 million over 10 years in direct and indirect sales in Hawai'i, and would support about 981 to 1,293 direct and indirect jobs.

As mentioned in the DEA, the expansion of Hawai'i's economy through these expenditures is contingent upon how they are financed. If the project modifications are financed by new Federal funds to the State, then the increase in expenditures will contribute to increased economic activity in Hawai'i. New funding for project modifications could come from special funds in the Army, the FHWA, or other Federal agencies.

However, if increased expenditures on project modification are funded by matching funds from the State, or through funds from Federal sources already intended for use in the State, there would be no significant change in economic activity. In addition, some of the project modification costs are attributable to the listing of the plants and are not attributable to critical habitat alone. As such, and undetermined percentage of the \$83 million to \$109 million over 10 years and the 981 to 1,293 direct and indirect jobs are attributable to critical habitat.

**6.c. Social Welfare Benefits**

A commenter suggested that the critical habitat designation for the plants would help protect intact native ecosystems, including native forest in the watershed. In turn, the commenter suggested that this protection would promote groundwater recharge, keep water pure and clean and reduce erosion onto the reefs. The commenter also suggested that species preservation results in social welfare benefit, including cultural benefits, and that these benefits should be quantified. Chapter VI, Section 6 of the DEA already discussed these potential benefits.

It is not feasible, however, to fully describe and accurately quantify these benefits in the specific context of the intended designation because of the scarcity of available studies and information relating to the size and value of beneficial changes that area likely to occur as a result of designating critical habitat. In particular, the following information is not currently available: 1) quantified data on the value of the plants or their critical habitat; and 2) quantified data on the change in the quality of the ecosystem and the species as a result of the designation (for example, how many fewer ungulates will roam into the critical habitat, how many fewer invasive plants will be introduced as a result, and therefore how many more of the listed plants will be present in the area).

When primary research is not possible, economists frequently rely on the method of benefits transfer. Benefits transfer involves application of results of existing valuation studies to a new policy question. Two core principles of defensible benefits transfer are (1) the use of studies that apply acceptable techniques to generate welfare values, and (2) similarity between the good being valued in the literature and the good being valued in the policy context to which the transfer is being made (i.e., the protection afforded the plants by listing and critical habitat). As noted above, no known studies exist on quantified data on the value of the plants or the change in the quality of the ecosystem and the species as a result of the designation. Therefore, applying results of existing valuation studies on other species to the plants is not feasible.

The discussion presented in the DEA and in this Addendum provides examples of potential benefits, which derive primarily from the listing of the species, based on information obtained in the course of developing the economic analysis. It is not intended to provide a complete analysis of the benefits that could result from section 7 of the Act in general, or of critical habitat designation in particular. In short, the Service believes that the benefits of critical habitat designation are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.

**6.d. UH Study on the Value of Environmental Services Provided by the Ko‘olau Mountains**

A commenter suggested that a 1999 analysis by the University of Hawai‘i (UH) economists on the total value of environmental service provided by O‘ahu’s Ko‘olau Mountains be used as a model for estimating the value of the environmental benefits provided by critical habitat (Kaiser, et al). This document was, in fact, used in the DEA as a resource document for concepts, and for identifying documents that report the original research on certain subjects.

However, the UH study has limited applicability for valuing the benefits of the intended designation for a number of reasons. First, the UH study had a different purpose, which was to estimate the total value of environmental benefits provided by the entire Ko'olau Mountains on the island of O'ahu versus the value of the more limited benefits provided by the intended designation on the Big Island. Consistent with its purpose, the UH study provides no estimates of the changes in environmental conditions resulting from changes in land and stream management due to critical habitat designation.

Furthermore, many of the assumptions and much of the analysis in the UH study are not transferable to the economic analysis for the plants critical habitat. For example, the Ko'olau Mountains were evaluated as a contiguous area, whereas the intended designation is composed of many separate areas. The value of water recharge in the UH study reflects projected water supply and demand conditions on O'ahu – an island which is less than one sixth the size of the Big Island but has a population of almost six times that of the Big Island. Also, the UH benefit analysis of reducing soil runoff is unique to three valleys that drain through partially channelized streams in urban areas into the man-made Ala Wai Canal. Since this canal was designed with inadequate flushing from stream or ocean currents, it functions as an unintended settling basin so must be dredged periodically. These conditions do not exist on the Big Island.

## **7. PUBLIC COMMENTS**

Much of the information provided during the public comment period has been incorporated into the text and tables of the Addendum. However, some reviewers commented that the DEA did not address or did not adequately consider a variety of costs and benefits that they believe could occur due to the plant listings and critical habitat designation. Many of these possible costs were, in fact, considered and some were addressed in the DEA. In many cases, however, potential costs were purposely not addressed in the DEA because they are not expected to occur. In other cases, the comments are no longer relevant, given the Service's intended modifications to the proposed critical habitat. Finally, in some cases, the comments provided new information and costs were modified earlier in this Addendum.

The following responds to specific comments raised during the public comment period that relate to the economic impact of the proposed designation.

### **1) Private Lands**

*Comment:* One commenter expressed concern over the potential for designation of critical habitat to have significant adverse effects on private lands, both Agricultural and Urban, due to increased State regulatory implications.

*Response:* The potential adverse effect on private lands in both the Agricultural and Urban Districts are discussed in the Indirect Costs sections of the DEA and in the Addendum. The effects include redistricting, conservation management, State and county development approvals, reductions in property values, etc. The DEA and Addendum estimate the costs of such impacts but state that the probability that some of these effects will occur is not reasonably foreseeable, low, or undetermined. For certain parcels, a reduction in certain property values is reasonably foreseeable, but the magnitude and duration of the loss is not known. As such, the Addendum estimates these impacts to be some undetermined fraction of \$71.2 million to \$124.4 million over 10 years.

**2) Game Animal Lawsuit**

*Comment:* One commenter expressed concern that the designation of critical habitat would result in a lawsuit to remove game animals, which would cause a tremendous financial burden to the State and destroy traditional and cultural practices of its people.

*Response:* Chapter VI, Section 4.b.(3) of DEA acknowledges that, if it were to occur, the removal of game animals would result in a loss in hunting activity, economic activity, hunter benefits, the consumption of hunting meat, the social and cultural value of hunting, and an increase in State expenditures. However, the concern about the removal of game animals is based in part on the premise that critical habitat will require the State to undertake steps to avoid *taking* of a listed species. As stated in the Conservation Management section of the Addendum, while critical habitat may provide information to help a landowner identify where *take* may occur, *take* prohibitions—to the extent they apply to listed plants—are triggered by the listing of a species and would apply whether or not critical habitat is designated. As such, designating critical habitat is not anticipated to result in the removal of game animals.

**3) Community Development**

*Comment:* Several commenters expressed concern that the designation of critical habitat would constrain community and infrastructure growth, business growth, and development of affordable housing.

*Response:* Proposed Units Y1 and Y2, or intended Units 12 and 13, are in an area planned for community and infrastructure growth, business growth, and the development of affordable housing. As mentioned in the Indirect Costs section of the DEA, there is a concern that critical habitat could increase the probability that these and other units would be redistricted to the Conservation District by the State Land Use Commission (LUC). This would result in a loss of almost all development potential for the land.

While it is possible that the designation of critical habitat could trigger a petition to redistrict land designated as critical habitat to the Conservation District, the likelihood is small that the petition would actually result in redistricting land in intended Units 12 and 13 into the Conservation District, especially if the landowners agree to certain restrictions on the land to limit development and protect portions of the intended designation. An illustrative example of the cost of these agreements ranges from \$18.3 million to \$19.4 million.

The determination that the probability of redistricting land in intended Units 12 and 13 is low is the result of professional judgment, after review of the requirements for redistricting, including the requirement that the LUC consider (1) the “commitment of state funds and resources;” (2) the “provision for employment opportunities and economic development;” and (3) the “provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups;” as well as “the preservation or maintenance of important natural systems or habitats” when considering a petition for redistricting. While a third party could sue the LUC to change its decision, this analysis assumes there is a low probability this lawsuit will be successful due to the amount of State funds invested in infrastructure development, the potential employment opportunities provided by planned development, and the number of affordable housing units planned in these intended Units.

However, as mentioned in the DEA and in the State and County Development Approvals section and the State and County Environmental Review section in the Addendum, there are concerns that other factors associated with critical habitat could affect development potential in intended Units 12 and 13. These factors include State and county development approvals, and State and county environmental review. An additional factor includes the reluctance for the State and county to continue with public projects in critical habitat for political reasons. The Addendum estimates the costs of these impacts to be \$48.9 million to \$96.5 million over 10 years, plus unquantifiable social and cultural costs to the community.

**4) Recreation and Subsistence**

Comment: Several commenters expressed concern that the designation of critical habitat would constrain outdoor recreation and subsistence hunting and gathering.

Response: The impacts to outdoor recreation and subsistence hunting and gathering are discussed in the DEA and the Addendum. Specifically, the Direct Costs section of the DEA, as amended by the Addendum, discusses impacts to State managed hunting, National Parks and Wildlife Refuges, State managed areas, and the State trail and access system. The Indirect Costs section of the DEA, as amended by the Addendum, discusses the impacts to management of game mammals and hunting lands, and subsistence and Native Hawaiian practices. Potential benefits to ecotourism and outdoor recreation are discussed in the Benefits Section of the DEA. The impacts, if any, for each of these activities are summarized in Table Add-3.

**5) Federal Funding**

Comment: Some commenters raised concerns over the ability of wildlife and other projects to receive Pittman-Robertson or other Federal funding or grants.

Response: Chapter VI, Section 3.a. of the DEA discussed Pittman-Robertson funding for wildlife projects. The State Department of Land and Natural Resources (DLNR) already consults with the Service regarding projects that receive Pittman-Robertson funding. As stated in the DEA, the designation of critical habitat may increase the level of effort required to analyze the effects of feral ungulates, especially in areas that are *unoccupied* by the listed plants. However, Hawai'i currently receives the minimum amount of Pittman-Robertson funds, so the intended designation would not impact the amount of Pittman-Robertson funds the State receives.

Impacts to other projects that receive Federal funding or grants, or have *Federal involvement*, are discussed in the Direct Costs section of the DEA, as amended by the Addendum. As shown in Table Add-3, the total direct costs range from \$46.6 million to \$62.7 million over 10 years.

**6) Federal Programs**

Comment: Two commenters had concerns regarding funding and assistance to farmers and ranchers in the form of U.S. Department of Agriculture loans, grants, subsidy payments, etc. or other Federal funding as in VA loans, FHA loans, NMHA loans or similar HUD programs.

Response: The impacts associated with USDA and HUD programs are discussed in the Ranching Operations and Residential Development sections in the Addendum. Impacts to ranching operations include \$38,800 to \$82,400 to the ranchers, NRCS, and the Service in section 7 consultation costs and no project modifications. The Addendum anticipates no impacts to residential development because areas planned for development are removed from the intended designation and other planned developments have no reasonably foreseeable *Federal involvement*.

**7) Conservation Easements**

Comment: One commenter was concerned that the designation of critical habitat would adversely affect their sale of conservation easements to the U.S. Forest Service

Response: The commenter's land was not included in the proposed designation and is also not included in the intended designation, so this analysis anticipates that the designation of critical habitat will not impact the sale of conservation easements on these parcels.

**8) DHHL Homesteading Program**

Comment: One commenter had specific concerns about the effect the designation of critical habitat would have relative to the DHHL homesteading program.

Response: As discussed in the Residential Development section in the Addendum, there is no DHHL land within the intended designation that is planned to be developed within the next 20 years. As such, any potential impacts to the DHHL homestead program are beyond the 10-year timeframe of this analysis.

**9) State and Federal Laws**

Comment: Several commenters commented that the economic analysis did not thoroughly consider the nexus between the State of Hawai'i's environmental laws and the Federal Endangered Species Act and other Federal laws (such as the Coastal Zone Management Act). At least two commenters commented that these plant species are already protected under State of Hawai'i law, which virtually assures that a violation of the Federal Endangered Species Act will also be a violation of the State law prohibition on harm to federally- and State-listed plants.

Response: The nexus between the State of Hawai'i's environmental laws and Federal laws is discussed in detail in the Indirect Costs section of the DEA, as amended by the Addendum. Specifically, impacts associated with State redistricting, mandated conservation management, State and county development approvals, and State and county environmental review are considered.

The DEA and Addendum examine any indirect costs of critical habitat designation such as where critical habitat triggers the applicability of a State or local statute. However, where it is the listing of a species that prompts action at the State or local level, the impacts are not attributable to critical habitat designation and are not appropriately considered in the economic analysis of critical habitat designation. Prohibition of "harm" is associated with the State laws regarding the *take* of listed plants. *Take* prohibitions are attributable to a listing decision and do not coextensively occur because of critical habitat designations. There are no *take* prohibitions associated with the plants critical habitat.

The commenters' reference to the Coastal Zone Management Act discusses the possibility of delays or denials of county Special Management Area (SMA) Use Permits for development projects in critical habitat. None of the planned development projects in the intended designation are located in the SMA, so this analysis anticipates no impacts associated with SMA Use Permits.

#### 10) Scope of Analysis

*Comment:* Several commenters commented that the economic analysis needs to take into consideration all economic impacts, including those in addition to "indirect" effects, those effects in the "reasonably foreseeable" future, or for those projects that are expected to occur within the next 10 years. Some commenters commented that the scope of the economic analysis was too narrow and needed to go beyond those direct economic impacts associated with project compliance with section 7 of the Act.

*Response:* Both direct and indirect impacts are analyzed in Chapter VI of the DEA, and in the Addendum, and both are summarized in Table Add-3. Information is limited and unreliable for projects, land uses, and activities that may occur at some time beyond the reasonably foreseeable future, so in general, these projects, land uses, and activities are not considered in the DEA or in the Addendum. A 10-year time horizon is used because many landowners and managers do not have specific plans for projects beyond 10 years. In addition, the forecasts in the analysis of future economic activity are based on current socioeconomic trends and the current level of technology, both of which are likely to change over the long term.

#### 11) Ecosystem Benefits

*Comment:* Several commenters commented that the economic analyses should also include those significant beneficial economic benefits that are provided by the designation of critical habitat, particularly since the economic analysis provides text to this effect. These benefits include, but are not necessarily limited to, things such as groundwater recharge, maintenance of surface water quality, erosion control, funding for research, development of nursery and landscape products, volunteer conservation work, careers in biology, and ecotourism. One commenter commented that protecting critical habitat is essential not only for the recovery of threatened and endangered plants but also to protect the ecosystems upon which they rely for long-term survival and recovery.

*Response:* The Benefits sections of the DEA and the Addendum discussed the benefits mentioned above. It is not feasible, however, to fully describe and accurately quantify these benefits in the specific context of the intended designation for the plants because of the scarcity of available studies and information relating to the size and value of beneficial changes that are likely to occur as a result of designating critical habitat. In particular, the following information is not currently available: (1) scientific studies on the magnitude of the recovery and ecosystem changes resulting from the critical habitat designation, and (2) economic studies on the per-unit value of many of the changes.

As mentioned in the Benefits section of the Addendum, a University of Hawai'i (UH) study does value ecosystem services. However, this study has limited applicability for valuing the benefits of the critical habitat designation for the plants for a number of reasons. First, the UH study had a different purpose, which was to estimate the total value of environmental benefits provided by the entire Ko'olau Mountains on the island of O'ahu. Consistent with its purpose, the UH study provides no estimates of the changes in environmental conditions resulting from changes in land and stream management due to critical habitat designation. Furthermore, many of the assumptions and



much of the analysis in the UH study are not transferable to the economic analysis for the critical habitat of the plants. For example, the Koʻolau Mountains were evaluated as a contiguous area, whereas the intended designation is composed of many separate areas. The value of water recharge in the UH study reflects projected water supply and demand conditions on Oʻahu – an island which is less than one sixth the size of the Big Island but has a population of almost six times that of the Big Island. Also, the UH benefit analysis of reducing soil runoff is unique to three valleys that drain through partially channelized streams in urban areas into the man-made Ala Wai Canal. Since this canal was designed with inadequate flushing from stream or ocean currents, it functions as an unintended settling basin so must be dredged periodically. Similar conditions are not present on the Big Island.

## **12) Funding Benefits**

*Comment:* One commenter commented that the only benefit that would arise from designation of critical habitat would be the availability of funding for the Department of Land and Natural Resources to be used towards the implementation of management plans prepared by The Nature Conservancy to fence and eradicate all game mammals within these areas.

*Response:* As mentioned in the Indirect Costs section of the DEA, the designation of critical habitat is not expected to change the nature of the ongoing debate regarding the management of game-mammal population in Hawaiʻi, although it may expand or refine the geographic focus. But, even with critical habitat, the DEA assumes that the probability is small that the State DLNR would adopt a policy to substantially reduce game-mammal populations in critical habitat units that overlap with State Hunting Units, even if critical habitat caused an increase in funding. This judgment is based on discussions with DLNR, others familiar with the subject, and decade of public testimony by hunters.

## **13) Conservation Management**

*Comment:* One commenter stated that to avoid legal liability (i.e., “taking”), a land owner may have to incur substantial costs associated with conservation management actions (e.g., fencing, exotics control) on their lands which contain designated as critical habitat. Another commenter raised concerns over the amount of funds necessary to manage all the lands proposed for critical habitat, citing costs associated with a 15-acre restoration project in North Kona (Kaʻupulehu) which was initiated in 1990, has used over \$600,000, and still continues to require management actions.

*Response:* Although the costs of conservation management were presented in the DEA for the purposes of illustration, this analysis assumes that these costs are not reasonably foreseeable for the reasons explained in Section 4.b. of the Addendum.

## **14) Department of Hawaiian Homelands (DHHL)**

*Comment:* One commenter commented that the designation of critical habitat on the majority of Hawaiian Home Lands at South Point and Waimea, which would require beneficiaries to conduct environmental assessments and consultations under section 7 in order to build homes or commence farming, would represent a substantial economic impact.

*Response:* Much of the DHHL land at South Point and Waimea are not included in the intended designation. North of Waimea, only gulches that are not suitable for housing development are included in intended Unit 9. Near South Point, the Service indicates it intends to reduce the amount of DHHL land from 1,490 acres in the proposed designation to 313 acres in the intended designation. The 313 acres in intended Unit 19 are part of the Kama'oa-Pu'ueo tract. As stated in the DEA, the 2002 DHHL *Hawai'i Island Plan* identifies the Kama'oa-Pu'ueo tract as a non-priority development, which means that its development is not likely in the next 20 years. There is no more DHHL land included in the intended designation. As such, this analysis estimates no impacts associated with DHHL land within the 10-year timeframe of this analysis.

#### **15) Hunting**

*Comment:* One commenter commented that there are 23,000 hunters in Hawai'i who bring an estimated \$31 million annually in State revenue. A disproportionately large percentage of these live on the Island of Hawai'i so, as such, designation of critical habitat will have a correspondingly adverse effect on the island's economic condition.

*Response:* For illustrative purposes, the loss in direct sales, direct and indirect sales, employment, and income associated with a loss of hunting activity in critical habitat is presented in Chapter VI, Section 4.b.(3) of the DEA. However, the DEA assumes that the probability that the State will adopt a policy to remove game animals from critical habitat is low. The Addendum makes no changes to this conclusion.

#### **16) Redistricting - 1**

*Comment:* Several comments commented on how designation of critical habitat would trigger the Department of Land and Natural Resources initiation of review, and potential reclassification, of lands for placement into the Conservation District pursuant to HRS 195D-5.1. Costs associated with this review were pointed out by another commenter who stated that they needed to be factored into the economic analysis along with reductions in tax revenues to Hawai'i County which would result from these actions.

*Response:* The costs associated with redistricting are discussed in detail in the Indirect Costs sections of the DEA and the Addendum. As stated in the Addendum, this analysis assumes that the probability is low that land currently planned for development in intended Units 12 and 13 will be redistricted to the Conservation District, especially if landowners agree to certain conditions to protect portions of the intended designation. This determination is the result the requirements for redistricting, including the requirement that the LUC consider the "provision for employment opportunities and economic development;" "commitment of State funds and resources;" the "provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups;" as well as "the preservation or maintenance of important natural systems or habitats" when considering a petition for redistricting (HRS 205-17).

However, it is reasonably foreseeable that certain other privately owned parcels in the Agricultural District in the intended designation may be redistricted. Redistricting is more likely for these parcels because there are no current plans for economic or community development, and they are not prime agricultural land. This redistricting could be completed by State agencies, or mandated as a result of a third-party lawsuit. The economic costs associated with redistricting these unplanned parcels are expressed in terms of a loss in property values and a loss in agricultural activity as discussed in the Indirect Costs section of the Addendum.

This analysis assumes that the impacts on county tax revenues as a result of redistricting are expected to be small. Much of the land that is at risk of redistricting is already assessed at a low agricultural value. In many cases, the agricultural value is lower than the assessed value for land in the Conservation District. This counter-intuitive result reflects the tax break the State gives to encourage agriculture. If the land is redistricted to a subzone other than the Protective Subzone, agriculture could continue in these areas, and the land would still be assessed at a low agricultural value. The land that is not assessed at a low agricultural value is assessed based on the future development potential. However, a loss in development potential for land in the intended designation could result in an increase in the development potential of land outside of the intended designation. This would result in little or no net change in the total property values on the Big Island. As such, while there may be a positive or negative effect on county tax revenues associated with redistricting, this analysis assumes that the net effect will be small.

#### 17) Redistricting - 2

Comment: One commenter disagreed with the finding that any redistricting of private lands would likely be limited for the following reasons: 1) the Department of Lands and Natural Resources mandate to initiate down-zone; 2) the extensive amount of critical habitat proposed for designation; and 3) the Service's efforts to document and justify critical habitat boundaries.

Response: As mentioned in the Indirect Costs section of the Addendum, even if DLNR initiates amendments to the Conservation District boundaries based on critical habitat, or is forced to do so by a third-party lawsuit, the LUC makes the final decision to redistrict a parcel. State law requires the LUC to consider a variety of factors when making this decision, including the "maintenance of other resources relevant to Hawai'i's economy, including, but not limited to, agricultural resources;" "provision for employment opportunities and economic development;" "commitment of State funds and resources;" the "provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups;" as well as "the preservation or maintenance of important natural systems or habitats" when considering a petition for redistricting (HRS 205-17). Portions of intended Units 12 and 13 are planned for economic and community development. Based on the LUC's criteria, this analysis assumes that there is a low probability that the LUC will redistrict (either of its own accord or as a result of a third-party lawsuit) these portions of intended Units 12 and 13 to the Conservation District.

Most of the land (approximately 257,700 acres, or 95 percent) in the intended designation is (1) already in the Conservation District, or (2) owned by the State or Federal Government. Much of the remaining land either (1) is planned for development and thus not likely to be redistricted for the reasons mentioned above, or (2) has little economic value because it is a cinder cone (pu'u), gulch, or established endangered plant preserve. The remaining 9,404 acres of land are in the Agricultural District and are not currently planned for economic or community development. It is reasonably foreseeable that this land will be redistricted to the Conservation District because of its importance to the conservation of the plant species. The economic costs associated with redistricting this land are presented in the State Redistricting of Land section of the Addendum. Specifically, these costs and other costs associated with redistricting are estimated to be \$22.3 million to \$27.9 million.

**18) Indirect Costs**

*Comment:* One commenter commented that the figures for indirect costs should be totaled in Table VI-3, as the commenter did not agree with the Service's finding that these costs were "speculative."

*Response:* A total indirect costs figure is not presented in Table VI-3 or in Table Add-3 because the probability that some of the indirect costs will occur is undetermined and the magnitude of other indirect costs is undetermined. Instead, the probabilities and magnitudes of certain categories of indirect costs are presented in the tables, with further discussion presented in the Indirect Costs sections of the DEA and Addendum.

The probability that certain indirect costs will occur depends on the interaction of Federal, State and county officials, landowners, and other interested parties. The outcome of these interactions will depend on a variety of factors that are not subject to accurate quantification or prediction. Furthermore, the probability that third-parties will file lawsuits and the probability that these lawsuits will be successful is not known. Thus, the probability that certain indirect costs will occur is undetermined.

**19) Kaloko Planned Development**

One commenter provided a number of comments related to Kaloko Properties, Kaloko Industrial Park, and Kaloko Town Center. These comments include the following:

*Comment:* A reference to the Kaloko Town Center and Kaloko Properties Development needs to be added to Table ES-1 under "residential development."

*Response:* The Kaloko Town Center and Kaloko Properties development is referenced in Section 3.c. of the Addendum and it is included in the heading "Other Residential Development" in Table Add-3.

*Comment:* Text on page VI-9, Section 3.b (residential development) needs to add a discussion regarding the proposed residential development which would be part of the Kaloko Town Center and Kaloko Properties Development.

*Response:* The Kaloko Town Center and Kaloko Properties development are referenced in Section 3.c. of the Addendum; however, there is no change in the DEA cost estimate.

*Comment:* Text on page VI-16, Section 3.c (industrial, commercial and other urban development) should include a discussion regarding the proposed Kaloko Town Center office, commercial, retail, school, and park uses.

*Response:* The Kaloko Town Center office, commercial, retail, school, and park uses are referenced in Section 3.f. of the Addendum; however, there is no change in the DEA cost estimate.

*Comment:* Text on page VI-17, second paragraph under 3.c, should be revised to reflect that the developer is TSA Corporation and that a county zone change allowing for commercial- industrial mixed use development was granted.

Response: This information is included in Section 3.e. of the Addendum; however, there is no change in the DEA cost estimate.

Comment: Text on page VI-41, last paragraph, should be revised to reflect the proposed Kaloko Town Center development and proposed residential uses that would be affected. They also requested that reference to the donation of land to the National Park Service be deleted.

Response: As discussed in Section 3.k. of the Addendum, since the land is planned for development, this analysis estimates that the conservation set-aside scenario for construction the Main Street Road project is no longer feasible. As such, the \$10.7 million to \$15.7 million total project modification cost for the K-to-K road projects mentioned in the DEA is adjusted to \$10.5 million to \$15.3 million.

Comment: Text on page VI-69 should add Kaloko Town Center and Kaloko Properties development to the cost of development loss due to redistricting.

Response: The economic cost of the loss of development potential of the Kaloko Town Center is not discussed in the redistricting section of the Addendum because the land is currently in the Conservation District. Instead, the cost of development loss for the Kaloko Town Center is included in the State and County Development Approvals section of the Addendum.

As discussed in the State Redistricting of Land section in the Addendum, the planned development in the portions of the Kaloko Properties development that are included in critical habitat include a golf course and single-family homes. The employment that could be generated by this project is not known. However, construction of the golf course and homes will generate employment on the island. Since the LUC must consider factors such as the “provision for employment opportunities and economic development” (HRS 205-17) when making redistricting decisions, this analysis assumes there is a low probability the Kaloko Properties will be redistricted to the Conservation District.

Comment: Text on page VI-74 regarding the expansion of Kaloko Industrial Park needs to be revised to reflect an economic loss of \$33 million dollars due to an estimated loss of 82 acres affecting 72 lots.

Response: As discussed in the State Redistricting of Land section in the Addendum, the planned development in the portions of the Kaloko Industrial Park expansion that are included in critical habitat include light industrial development and industrial/commercial mixed use development. Approximately 88 percent of the project is in intended Unit 12. The entire project is expected to generate 19,3450 direct full-time equivalent jobs during the build-out phase and 2,789 direct full-time equivalent jobs upon full build-out (Wilson Okamoto & Associates, Inc. 2000). Since the LUC must consider factors such as the “provision for employment opportunities and economic development” (HRS 205-17) when making redistricting decisions, this analysis assumes there is a low probability the Kaloko Industrial Park expansion will be redistricted to the Conservation District.

As mentioned in the State and County Development Approvals section of the Addendum, all of the major discretionary approvals for the Kaloko Industrial Park expansion have been obtained, so the designation of critical habitat is expected to have little impact on development approvals for the project. As such, this analysis anticipates there will be no loss of development potential attributable to the intended designation.

Comment: Text on page VI-76 and VI-85 should add the proposed Kaloko Town Center and Kaloko Properties development.

Response: These planned developments are considered in the State Redistricting of Land and the Reduced Property Value sections of the Addendum.

Comment: Text on page VI-83, 4e(3) needs to indicate that the completed Environmental Impact Statement for Kaloko Town Center will likely need to be updated and supplemented if included within designated critical habitat.

Response: This information is included and discussed in the State and County Environmental Review section of the Addendum.

Comment: If total economic loss of Kaloko Properties lands resulted from designation of critical habitat, this loss would be an estimated \$390 million which would be in addition to direct impacts to three proposed roadway projects.

Response: As discussed in the State and County Development Approvals section in the Addendum, the Kaloko Properties and Kaloko Town Center developments (Kaloko Developments) will require major discretionary approvals from the State and county. The commenter estimates that the total economic impact if these developments do not occur as an indirect result of the intended designation will be approximately \$390 million, based on the allowable density; average regional selling values of single-family and multi-family homes; the development cost of office, commercial and retail buildings; and the development costs per acre of golf courses and parks.

However, the methodology used by the commenter to derive the estimated economic impact of \$390 million is not consistent with the methodology presented in the DEA. The landowner's estimate is based on selling values and development cost, not profits. As mentioned in the DEA, only the previous expenditures (sunk costs) and future potential profits to the landowner are considered an economic impact of critical habitat designation. Additional construction and development costs are not considered because it is assumed that if development cannot occur in critical habitat, it will relocate elsewhere in the region. This assumption is supported by the fact that a large area surrounding critical habitat is planned for urban expansion in the County of Hawai'i's General Plan, and because there are other entitled projects awaiting development (such as a 2,640 acre project on State lands that is just north of intended Unit 13 and planned for residential, commercial, and light industrial development; parks; a golf course; and other uses).

As estimated in the State and County Development Approvals section in the Addendum, the sunk costs associated with the Kaloko Developments in the intended designation is \$5.8 million and the present value of the future stream of profits ranges from \$17 million to \$34 million. Again, the specific likelihood that the Kaloko Developments will not obtain State and county development approvals as a result of the intended designation is unknown.

**20) Villages at La‘i‘opua (VOLA)**

*Comment:* One commenter commented that the designation of critical habitat would compromise the financial feasibility of the VOLA project should there be future Federal involvement. As such, the commenter does not agree that the economic impacts of the designation of critical habitat would be “moderate” or “modest.”

*Response:* Section 3.b of the Addendum specifically addresses the commenter’s concerns. The State Housing and Community Development Corporation of Hawai‘i (HCDCH) is the primary agency responsible for planning the VOLA project. As a result of further discussions with HCDCH and a review of the Service’s record regarding the VOLA project, this analysis concludes that no section 7 consultations are anticipated in the next 10 years. First, HCDCH is not currently seeking Federal funding for the project and was unable to identify specific potential Federal funding programs. Second, the U.S. Department of Housing and Urban Development (HUD) indicates that there are currently no competitive grant programs for the development of affordable housing, and that there are not likely to be any in the near future (HUD, 2003). Third, the U.S. Department of Agriculture Rural Housing Service (RHS) has a loan guarantee program and a competitive loan program for the development of affordable housing, but this program is used primarily by individual homeowners and has never been used by State and county agencies in Hawai‘i (RHS, 2003). Thus, because there is no reasonably foreseeable Federal involvement for the VOLA development, no section 7 consultations are anticipated.

**21) Kealakehe Ahupua‘a 2020 (K2020)**

*Comment:* One commenter provided information on a proposed plan for the rehabilitation of the landfill site at Keahuolu, which involves development of a golf course to be used to teach children both a sport and a skill, and commented that designation of critical habitat in this area would adversely affect the proposal. The commenter also commented that in the area currently occupied by the sewage plant, there was a desire to build a wetlands endangered species park and designation of critical habitat could affect potential Federal funding sources.

*Response:* Section 3.m of the Addendum discussed the K2020 project. Specifically, due to likely Federal involvement, the K2020 project would be subject to a section 7 consultation. As a result of the consultation, the Service indicates that K2020 may have to obtain funding for planned endangered plant preserves in intended Unit 13 and the restoration of the portions of critical habitat that are temporarily disturbed.

The area currently occupied by the sewage plant and planned for a wetlands endangered species park is not included in the intended designation and thus this analysis anticipates no costs associated with this portion of the K2020 planned project.

## 22) Roads

Comment: One commenter commented that the designation of critical habitat would restrict the Department of Transportation's options in the design, maintenance, and construction of highways in affected areas and threaten the limited resources to maintain and improve State highways. This commenter also stated that the designation of critical habitat would significantly increase the cost of planning design, construction, maintenance, and repair of the following roads: Saddle Road, Kohala Mountain Road, Kawaihae Road, Queen Ka'ahumanu Highway, Mamalahoa Highway, Volcano Road, and Kealahkehe Parkway.

Response: The costs associated with planned road projects in critical habitat are discussed in Chapter VI, Section 3.i. of the DEA and in Section 3.j. and 3.k. of the Addendum. These sections discuss the Saddle Road Improvement and Realignment project and the planned widening of the Queen Ka'ahumanu Highway. The Kawaihae Road is not included in the intended designation. Within the 10-year timeframe of this analysis, there are no known construction, maintenance, and repair projects for the Kohala Mountain Road and the Volcano Road that will impact the *primary constituent elements* for the listed plants in the intended designation.

The Mamalahoa Highway (Route 190) safety improvements in intended Unit 10 involve simple re-paving and resurfacing of the existing roadway. As mentioned in the DEA, the critical habitat provisions of section 7 do not apply to the operation and maintenance (O&M) of existing man-made features and structures because these features do not contain any *primary constituent elements*. Thus, the safety improvements planned for Mamalahoa Highway in intended Unit 10 would not be subject to section 7 consultation because they involve operation and maintenance activities rather than new construction.

Finally, while the widening of Kealahkehe Parkway (Route 197) in intended Unit 13 is a long-term project, there is no timetable given for the project. It is likely that extension of the Parkway (outside of the intended designation) would be required before widening the existing portion of roadway; however, no timetable is given for the completion of the extension. In addition, the State DOT is working on several other widening projects in the area, with its main focus on widening the Queen Ka'ahumanu Highway from downtown Kailua to the Airport, that are not estimated to be completed until 2011. Given the circumstances, it is deemed unlikely that widening of Kealahkehe Parkway (Route 197) will occur within the next 10 years.

## 23) Trust Lands

Comment: Several commenters commented that the designation of critical habitat on trust lands (e.g., the Queen Lili'uokalani Trust and Kamehameha Schools) could negate decades of planning as well as millions of dollars of infrastructure investment. This, in turn, could adversely affect future revenues which would be generated by these entities and, therefore, their ability to carry out the social and cultural mandates to provide for their beneficiaries. One commenter specifically referenced concerns over Keahuolu Ahupua'a being the last and only future of producing lands owned by the Queen Lili'uokalani Trust and the need for those lands to continue the legacy left by the Queen.

Response: The economic, social, cultural, and political impacts associated with the loss of the development potential on Queen Lili'uokalani Trust (QLT) land in intended Unit 13 are discussed in detail in Chapter VI, Section 4.c.(7) of the DEA and the State and County Development Approvals section in the Addendum. Specifically, the Addendum estimates that the intended



designation could lead to a delay in State and county development approvals. This would delay completion of the project and the associated lease-rent revenues for QLT. This could have related social and cultural costs for the community.

The portions of the parcel owned by Kamehameha Schools and leased by PIA-Kona Limited Partnership that are planned for housing development are not included in the intended designation. The portions of this parcel that are included in the intended designation are currently managed as a endangered plant preserve and there are no plans for a change in management. Kamehameha Schools did not identify other lands in the intended designation that are planned for development or are likely to generate significant future revenues.

**24) Queen Lili'uokalani Trust (QLT)**

*Comment:* One commenter commented on areas of the economic analysis where they felt it both over- and underestimated economic costs. The commenter requested that the DEA be revised to reflect that QLT's own analysis did acknowledge that additional funds would be expended to achieve build-out of Phases I and II. The commenter also asked that the economic analysis include the increased likelihood of loss of entitlements and revenue and increased costs associated with permitting costs and development of infrastructure for Phase III.

*Response:* Chapter VI, Section 4.c.(7) of the DEA discusses the costs associated with the loss of development potential at the Keahuolu project site. The DEA references an economic impact analysis supplied by QLT which states the portions of the planned development in Phases I and II in the proposed critical habitat would yield \$44.2 million per year in lease-rent revenue after the project is fully built out. The DEA stated that this estimate tends to overstate the total economic impact because it does not include additional funds that would have to be expended by QLT in order to reach full build-out. The QLT analysis acknowledges this fact, and thus the QLT analysis did not overstate the total economic impact.

The economic impacts associated with a delay of entitlements, a loss of revenue, and a potential modification to the development approvals for Phase III of the Keahuolu Project are discussed in the State and County Development Approvals section of the Addendum. In particular, costs are anticipated to range from \$14.1 million to \$21.9 million.

**25) Kamehameha Schools and PIA-Kona Limited Partnership**

*Comment:* One commenter raised a specific concern about the economic impact to Kamehameha Schools and PIA-Kona Limited Partnership.

*Response:* The portions of the parcel owned by Kamehameha Schools and leased by PIA-Kona Limited Partnership that are planned for housing development are not included in the intended designation. The portions of this parcel that are included in the intended designation is currently managed as a endangered plant preserve and there are no plans for a change in management. As such, this analysis anticipates there will be no economic impact to the owners of this parcel as a result of the intended designation.

**26) Kailua to Keahole**

*Comment:* Two commenters commented that critical habitat in the Kailua to Keahole area of Kona is proposed in a region that has been master-planned for urban expansion by the State and county for over 30 years and for which \$50 million of infrastructure (e.g., Kealakehe Parkway and

Kealahou High School) is already in place. This area also includes a currently undeveloped portion of the State's Villages at La'i'opua (VOLA) project which is intended for affordable housing, although currently stalled in litigation. The commenter noted that this West Hawai'i area is one of the fastest growing regions in the State and there is no other viable area for expansion.

*Response:* The direct and indirect impacts to the Kailua to Keahole area of Kona within intended Units 12 and 13 are discussed in detail in the DEA and in the Addendum, including impacts to State VOLA project, the Keahuolu Project, the Kaloko Industrial Park expansion, the Kaloko Town Center, the Kaloko Properties development, three road projects, and the K2020 county landfill project. The growth of West Hawai'i is essential to the economic development of the Big Island. However, intended Units 12 and 13 cover a relatively small portion of the area planned for urban expansion in the County of Hawai'i General Plan. While the DEA and the Addendum estimate the economic costs to the landowners in critical habitat, it is estimated that any development displaced from critical habitat will occur elsewhere on the Big Island, due to the availability of comparable land. Thus, the net economic impacts to the economic development of the Big Island will be small.

## 27) **Military Impacts**

*Comment:* Several commenters commented regarding the potential adverse effect designation of critical habitat could have on the military. Specifically, hindering the Army and Navy's (Marines') ability to perform its mission because of the limitations imposed by critical habitat would not only have an adverse effect on the nation's military readiness but would also be a costly waste of fiscal resources or additional financial burden.

*Response:* The readiness and fiscal impacts to the military are discussed in the Military Activities section in the Direct Costs section of the Addendum and in the Military Readiness section in the Indirect Costs section of the Addendum. Specifically, the direct costs to military operations over the next 10 years range from \$31.1 million to \$40.1 million. The indirect costs include an undetermined probability of a loss of \$693 million in transformation projects and a possible reduction in readiness.

## 28) **Investigating the Implications of Critical Habitat**

*Comment:* One commenter comments that designation of critical habitat will cause private landowners to spend their own resources to determine the possible consequences of such designation on their lands (e.g., legal fees).

*Response:* The costs associated with determining the possible consequences of critical habitat are included in the Investigating the Implications of Critical Habitat section of the Addendum. Specifically, approximately 19 private landowners may investigate the implications of critical habitat on their lands at a cost of \$50,000 to \$181,000.

## 8. **SUMMARY OF ECONOMIC IMPACTS**

Table ES-1 of the DEA, which is duplicated as Table VI-3 in Chapter VI of the DEA, presented the costs and benefits attributable to the plant listings and proposed critical habitat designation. Table Add-3 in this Addendum presents revised costs and benefits based on the following: (1) the intended critical habitat designation, (2) issues raised in public comments on the DEA, and (3) new information obtained since the DEA was published. Table Add-3 also compares the DEA costs with the revised costs, and provides explanations as appropriate. As illustrated in this

table, the Service's intention to reduce for biological reasons the area of the critical habitat from 437,299 acres to 271,016 acres will reduce (1) direct section 7 costs, (2) indirect costs, and (3) benefits.

In the proposed critical habitat, direct section 7 costs were expected to range from \$53.2 million to \$71.8 million. For the intended critical habitat, this analysis expects the direct section 7 costs to range from \$46.6 million to \$62.7 million. Table Add-3 also compares the average annual direct costs.

Regarding indirect costs, this analysis anticipates no islandwide impacts on economic and population growth. As shown in Table Add-3, there is little or no change in several of the indirect costs when compared the indirect costs in the DEA. However, there is a reasonably foreseeable cost associated with redistricting or the risk of redistricting in the intended designation, ranging from \$22.3 million to \$27.9 million, which is less than the worst-case scenario redistricting costs presented in the DEA. The costs associated with mandated conservation management presented in the DEA are not reasonably foreseeable and thus are not included in the Addendum. There is an undetermined probability that the costs associated with State and county development approvals could range from \$48.9 million to \$96.5 million. The potential loss in property values would overlap with the losses associated with redistricting and State and county development approvals, and is thus an undetermined percentage of \$71.2 million to \$124.4 million over 10 years (\$22.3 million + \$48.9 million; \$27.9 million + \$96.5 million).

Most of the benefits of implementation of section 7 for the listed plants mentioned in the DEA remain unchanged. However, other benefits are no longer expected or will be reduced, including the regional economic activity generated by conservation management and by project modification expenditures.

**Table Add-3. Section 7 Costs & Benefits Attributable to the Plant Listings & Critical Habitat**

(10-year estimates)

CH = critical habitat    PMs = project modifications    O&amp;M = operation and maintenance    Fed = Federal    M = million    n/a = not applicable

Item	DEA		Addendum		Explanation
	Low	High	Low	High	
<b>DIRECT SECTION 7 COSTS</b>					
<b>Management of Game Hunting</b>					
State-Managed Lands, Consultations	\$ 6,440	\$ 21,260	\$ 6,440	\$ 21,260	No change
State-Managed Lands, PMs	\$ 36,670	\$ 61,600	\$ 36,670	\$ 61,600	
<b>Residential Development</b>					
Department of Hawaiian Homelands, Consultations	\$ 70,200	\$ 84,500	None	None	Area to be removed for biological reasons
Department of Hawaiian Homelands, PMs	Minor	Minor	None	None	
Villages at La'i'opua	None	None	None	None	Fed funding for State housing project not reasonably for
Other Residential Development	None	None	None	None	No change, but Addendum considers new information
<b>Industrial and Commercial Development</b>					
Keahuolu Project	None	None	None	None	No change
Kohanaiki Business Park Expansion	None	None	None	None	Area to be removed for biological reasons
Kaloko Industrial Park Expansion	None	None	None	None	No change, but Addendum considers new information
Kaloko Town Center	n/a	n/a	None	None	No change, but Addendum considers new information
<b>Ranching Operations</b>					
Farm Service Loans, Consultations	\$ 48,500	\$ 103,000	\$ 38,800	\$ 82,400	Less important agricultural land and no farm land in inter
Farm Service Loans, PMs	Minor	Minor	None	None	
<b>Forestry</b>	None	None	None	None	No change
<b>Military Activities</b>					
Army, Consultations	\$ 3,933,200	\$ 5,052,300	\$ 82,800	\$ 82,800	Less of Pohakuloa Training Area included in intended de
Army, PMs	\$ 30,700,000	\$ 41,100,000	\$ 30,000,000	\$ 40,000,000	
<b>National Parks and Wildlife Refuges</b>					
Volcanoes National Park (VNP), Consultations	\$ 3,800	\$ 7,600	\$ 3,800	\$ 7,600	No change
VNP, PMs	Minor	Minor	Minor	Minor	
VNP Expansion, Consultations	\$ 62,100	\$ 62,100	\$ 62,100	\$ 62,100	No change
VNP Expansion, PMs	Minor	Minor	Minor	Minor	
Hakalau National Wildlife Refuge, Consultations	\$ 3,800	\$ 11,400	\$ 3,800	\$ 11,400	No change
Hakalau National Wildlife Refuge, PMs	Minor	Minor	Minor	Minor	

**Table Add-3. Section 7 Costs & Benefits Attributable to the Plant Listings & Critical Habitat, Continued**

(10-year estimates)

CH = critical habitat    PMs = project modifications    O&amp;M = operation and maintenance    Fed = Federal    M = million    n/a = not applicable

Item	DEA		Addendum		Explanation
	Low	High	Low	High	
DIRECT SECTION 7 COSTS, CONTINUED					
State Managed Areas					
Hapuna Beach State Rec Area	None	None	None	None	Area to be removed for biological reasons
Natural Area Reserves (NAR)					
Kipahoehoe NAR, Consultations	\$ 5,200	\$ 5,200	\$ 5,200	\$ 5,200	No change
Kipahoehoe NAR, PMs	None	None	None	None	
Pu'u Maka'ala NAR, Consultations	\$ 5,200	\$ 15,600	\$ 5,200	\$ 15,600	No change
Pu'u Maka'ala NAR, PMs	None	None	None	None	
Manuka NAR Trail, Consultations	\$ 19,600	\$ 19,600	\$ 19,600	\$ 19,600	No change
Manuka NAR Trail, PMs	Minor	Minor	Minor	Minor	
Manuka NAR Fencing, Consultations	\$ 5,200	\$ 5,200	\$ 5,200	\$ 5,200	No change
Manuka NAR Fencing, PMs	None	None	None	None	
State Forest Reserves					
Fire Management, Consultations	\$ 5,200	\$ 10,400	\$ 5,200	\$ 10,400	No change
Fire Management, PMs	None	None	None	None	
Roads					
Existing Roads	None	None	None	None	No change
New Roads, Consultations					
Saddle Road, Conference/Re-initiation	\$ 20,700	\$ 20,700	\$ 20,700	\$ 20,700	No change
Saddle Road, PMs	\$ 7,100,000	\$ 8,000,000	\$ 239,000	\$ 398,000	Costs associated with completed consultation removed & removed for biological reasons
Keahole to Keauhou (K-to-K), Consultations	\$ 98,600	\$ 98,600	\$ 98,600	\$ 98,600	No change
K-to-K Region, PMs	\$ 10,700,000	\$ 15,700,000	\$ 10,500,000	\$ 15,300,000	Unplanned land for conservation set-aside not available
Conservation Projects					
Projects Funded by the Service, Consultations	\$ 11,400	\$ 22,800	\$ 11,400	\$ 22,800	No change
Projects Funded by the Service, PMs	None	None	None	None	
USDA Conservation Programs, Consultations	\$ -	\$ 76,000	\$ -	\$ 45,600	Less important agricultural land in intended designation
USDA Conservation Programs, PMs	Minor	Minor	Minor	Minor	
Nature Conservancy Projects, Consultations	\$ 15,600	\$ 31,200	\$ 15,600	\$ 31,200	No change
Nature Conservancy Projects, PMs	Minor	Minor	Minor	Minor	
Other Conservation Projects, Consultations	\$ 20,800	\$ 41,600	\$ 20,800	\$ 41,600	No change
Other Conservation Projects, PMs	Minor	Minor	Minor	Minor	
Water Systems					
Potable Water System	None	None	None	None	No change
Non-potable Water Systems, Consultations	\$ 10,100	\$ 33,200	\$ 10,100	\$ 33,200	No change
Non-potable Water System, PMs	None	None	None	None	

**Table Add-3. Section 7 Costs & Benefits Attributable to the Plant Listings & Critical Habitat, Continued**

(10-year estimates)

CH = critical habitat    PMs = project modifications    O&amp;M = operation and maintenance    Fed = Federal    M = million    n/a = not applicable

Item	DEA		Addendum		Explanation
	Low	High	Low	High	
<b>DIRECT SECTION 7 COSTS, CONTINUED</b>					
<b>Fire Management</b>					
Pre Suppression, Consultations	\$ 9,700	\$ 19,400	\$ 9,700	\$ 19,400	No change
Pre Suppression, PMs	None	None	None	None	
Fire Suppression, Consultations	\$ 52,000	\$ 314,000	\$ 52,000	\$ 314,000	No change
Fire Suppression, PMs	None	None	None	None	
<b>Communications Facilities</b>					
New Facilities, Consultations	\$ 13,700	\$ 27,300	\$ 13,700	\$ 27,300	No change
New Facilities, PMs	-	600,000	-	600,000	
<b>Golf Courses</b>	None	None	None	None	No change
<b>State Trail and Access System</b>					
Consultations	\$ 5,200	\$ 5,200	\$ 5,200	\$ 5,200	No change
PMs	None	None	None	None	
<b>Drug Enforcement</b>					
Consultations	\$ 5,200	\$ 31,400	\$ 5,200	\$ 31,400	No change
PMs	187,500	225,000	187,500	225,000	
<b>Natural Disasters</b>					
FEMA Recovery Projects, Consultations	\$ 3,800	\$ 7,500	\$ 3,800	\$ 7,500	No change
FEMA Recovery Projects, PMs	Minor	Minor	Minor	Minor	
USDA Disaster Assistance, Consultations	\$ 3,800	\$ 7,500	\$ 3,800	\$ 7,500	No change
USDA Disaster Assistance, PMs	Minor	Minor	Minor	Minor	
<b>Ecotourism</b>	None	None	None	None	No change
<b>Kealahou 2020</b>					
Consultations	n/a	n/a	\$ 20,200	\$ 20,200	Information on project with Fed involvement provided during comment period
PMs	n/a	n/a	\$ 5,100,000	\$ 5,100,000	
<b>TOTAL DIRECT COSTS</b>					
<b>Direct</b>	\$ 53,163,210	\$ 71,821,160	\$ 46,592,110	\$ 62,734,360	Total may understate economic impact because the cost project modifications are not included.
<b>Discounted Present Value</b>	\$ 37,339,614	\$ 50,444,177	\$ 32,724,348	\$ 44,061,989	Present value and annualized calculations are based on prescribed seven percent discount rate and the assumed costs are distributed evenly over the entire period of analysis
<b>Annualized</b>	\$ 5,316,321	\$ 7,182,116	\$ 4,659,211	\$ 6,273,436	

**Table Add-3. Section 7 Costs & Benefits Attributable to the Plant Listings & Critical Habitat, Continued**

(10-year estimates)

CH = critical habitat    PMs = project modifications    O&amp;M = operation and maintenance    Fed = Federal    M = million    n/a = not applicable

Item	DEA Estimate	Addendum Estimate and Explanation of Change
<b>INDIRECT COSTS *</b>		
Management of Game Mammals & Loss of Hunting Lands	Small probability of a 10 year loss of \$13 M in direct sales, \$23M in total direct and indirect sales, \$7.6 M in income, and \$6.8 M in hunter benefits. Additional losses include the value of the hunting meat to the hunters and their families and the social and cultural value of hunting to the community.	No change
Redistricting of Land by the State	Redistricting or the risk of redistricting could lead to a loss of an undetermined percentage of \$300 M to \$400 M, plus un-quantifiable political and social impacts.	Redistricting certain parcels that are valuable to the community is reasonably foreseeable. However, redistricting or the risk of redistricting other parcels could lead to a loss of up to \$2 M from agreements to restrict development, property value, and permitting for agricultural activity, and contesting redistricting.
Conservation Management	Low probability of a loss of \$250 M to \$430 M, plus the loss of the value of the hunting meat to the hunters and their families and the social and cultural value of hunting to the community.	Conservation management not reasonably foreseeable.
State and County Development Approvals	Costs to projects range from insignificant to substantial.	Undetermined probability of costs ranging from \$48.9 M to \$181,000 plus un-quantifiable social, cultural, and political costs to projects.
State and County Environmental Review	Costs of \$200,000 to \$525,000 to prepare an EIS for eight projects.	Costs of \$175,000 to \$525,000 for additional environmental review for seven projects.
Reduced Property Values	Loss of undetermined percentage of \$115 M to \$205 M in property values.	Loss of an undetermined percentage of redistricting and county development approval costs mentioned above.
Subsistence and Native Hawaiian Practices	Slight probability of a moderate impact.	No change
Military Readiness	Undetermined probability of a loss of \$693 M and an undetermined increase in the probability that the Army could leave Hawai'i.	Undetermined probability of a loss of \$693 M, but the risk of the Army leaving Hawai'i due to CH no longer reasonably foreseeable.
Condemnation of Property	No condemnation resulting from CH. Also, the Service acquires land by negotiation, not condemnation.	No change
Investigate Implications of CH	84 private landowners may investigate the implications of CH on their lands at a cost of \$273,000 to \$798,000.	19 private landowners may investigate the implications of CH on their lands at a cost of \$50,000 to \$181,000.
Loss of Conservation Projects	Some landowners want to avoid CH designation.	No change

\* Although the analysis does provide general estimates of some of the potential indirect costs, these estimates are not totaled because of the speculative nature of many of these costs. Instead, this table reports qualitative likelihood and quantitatively on their potential magnitude. For additional information on any of these indirect impacts, the reader should refer to the Chapter VI of the DEA and the Indirect Costs section of the Addendum.

**Table Add-3. Section 7 Costs & Benefits Attributable to the Plant Listings & Critical Habitat, Continued**

(10-year estimates)

CH = critical habitat    PMs = project modifications    O&amp;M = operation and maintenance    Fed = Federal    M = million    n/a = not applicable

Item	DEA Estimate	Addendum Estimate and Explanation of Change
<b>DIRECT BENEFITS</b>		
<b>Regional Economic Activity</b>		
Medical/Pharmaceutical Benefits	Probability of medical/pharmaceutical value unknown.	No change
Conservation Management	Low probability of conservation management which could lead to an expansion of Hawai'i's economy by an undetermined percentage of \$358 M to \$675 M over 10 years.	Conservation management not reasonably foreseeable.
Project modifications	Expansion of Hawai'i's economy by an undetermined percentage of \$90 M to \$118 M over 10 years.	Expansion of Hawai'i's economy by an undetermined per \$83 M to \$109 M over 10 years.
Ecotourism	Project modifications attributable to critical habitat could enhance the quality of the ecosystem thereby increasing the appeal of ecotourism tours to visitors.	No change
Avoided Cost to Developers	Occupied critical habitat helps developers site projects.	No change
<b>Social Welfare Benefits of Habitat Designation</b>	Critical habitat not anticipated to significantly add to the preservation of open space.	No change
<b>INDIRECT BENEFITS</b>		
Benefits of Endangered Species Preservation	Difficult to estimate preservation benefits and their value.	No change
Benefits of Broader Ecological Improvements	Difficult to determine environmental improvements attributable to the implementation of section 7.	No change



## REFERENCES<sup>5</sup>

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Memorandum to Chief, Branch of Listing, Washington, D.C. from Field Supervisor, Pacific Islands Field Office, Honolulu, Hawai'i re: Big Island Plants Critical Habitat Boundary Modifications and Addendum to the Draft Economic Analysis, February 2003.

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U.S. Environmental Protection Agency. *Revised Interim Guidance for EPA Rulewriters: Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act*. March 1999.

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Information was provided in communications with representatives of:

- Kealakehe Ahupua'a 2020
- State of Hawai'i, Department of Business, Economic Development & Tourism, Housing and Community Development Corporation of Hawai'i
- U.S. Army Garrison, Hawai'i
- U.S. Department of Agriculture, Rural Housing Service
- U.S. Department of Housing and Urban Development
- U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office

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<sup>5</sup> Certain references listed in the references section of the DEA were also used in the preparation of the Addendum.